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Number 6.

DECEMBER, 1902.

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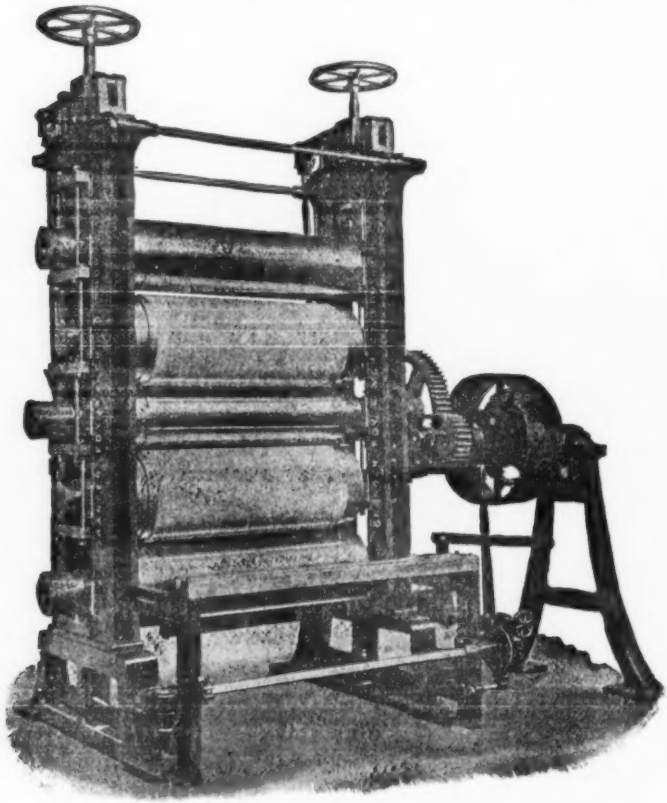

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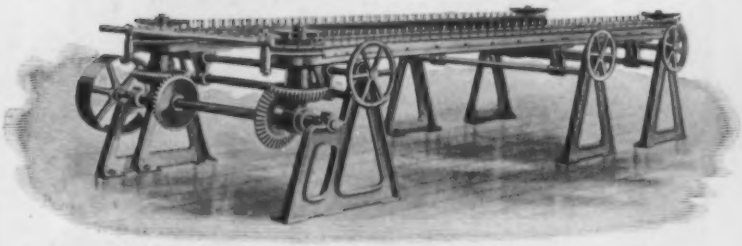

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Builders of

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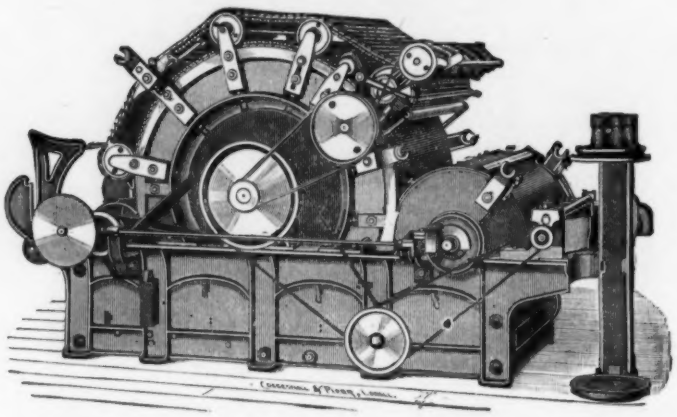
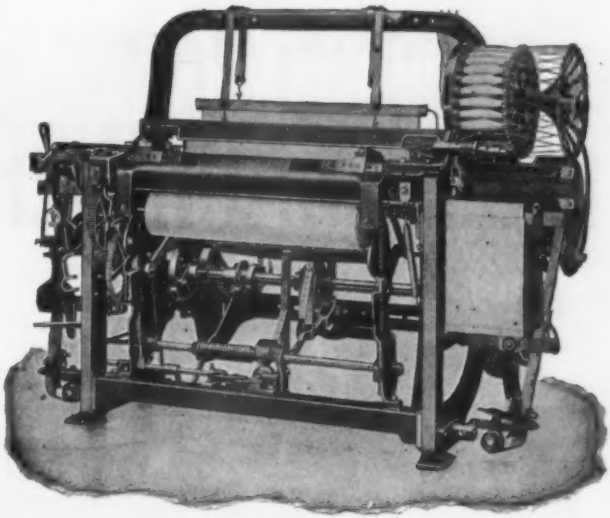
OF EVERY DESCRIPTION.



Revolving Flat Cards, Railway Heads,
Ring Spinning Frames, Fly Frames,
Drawing Frames, Spoolers, Warpers,
Slashers, Looms.

Worsted Machinery.

ILLUSTRATED CATALOGUES SENT ON APPLICATION.



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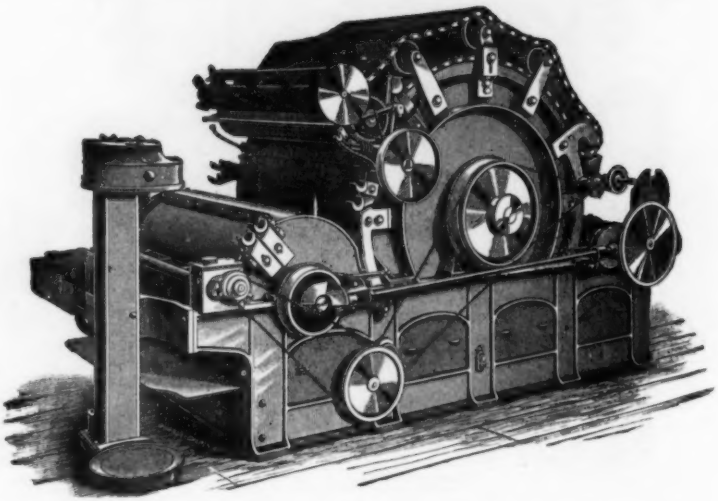

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SLUBBING FRAMES
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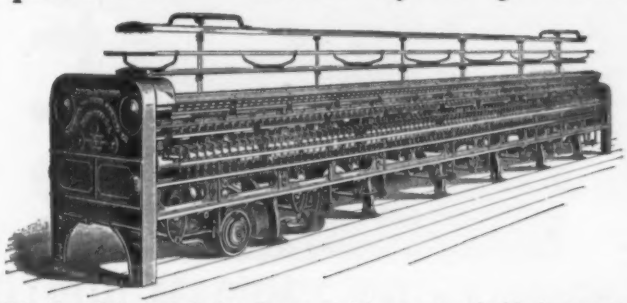

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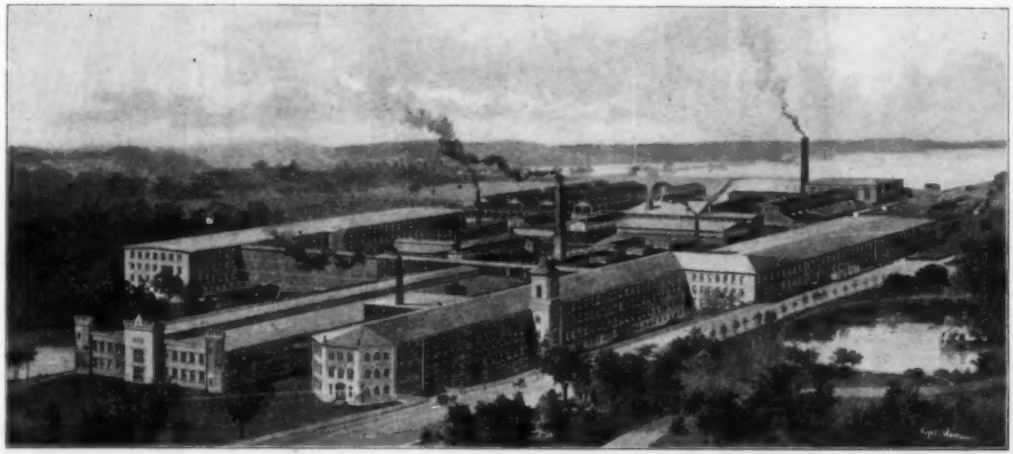

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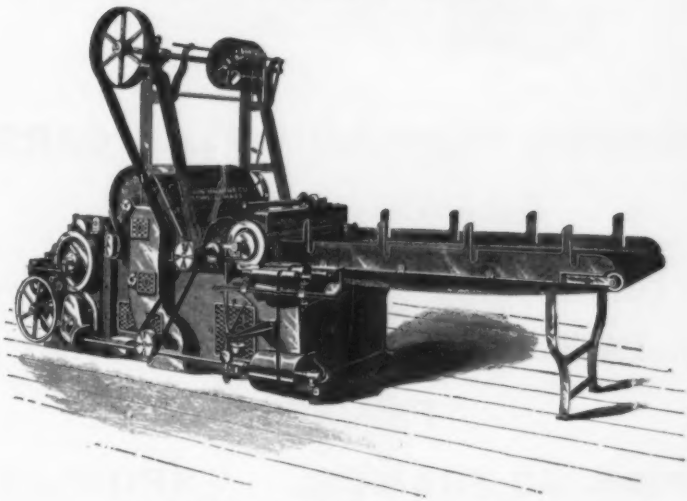

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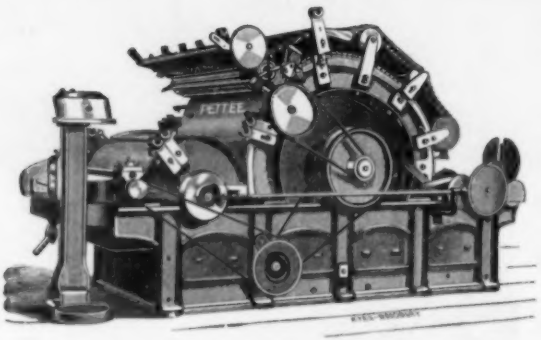

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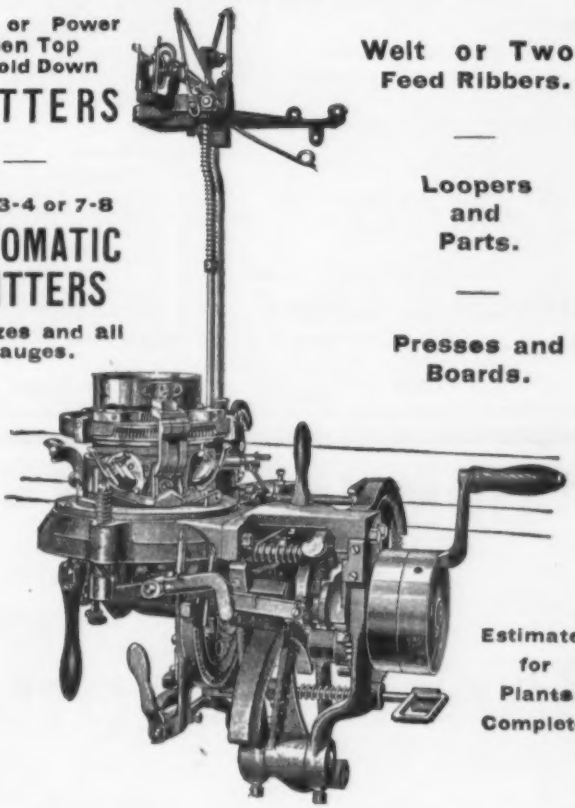

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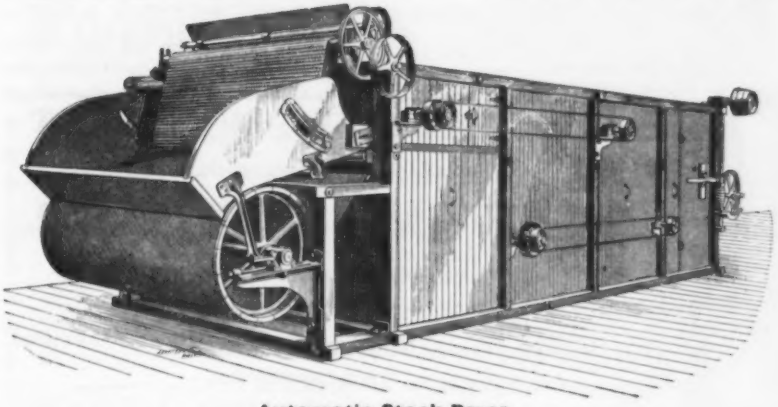

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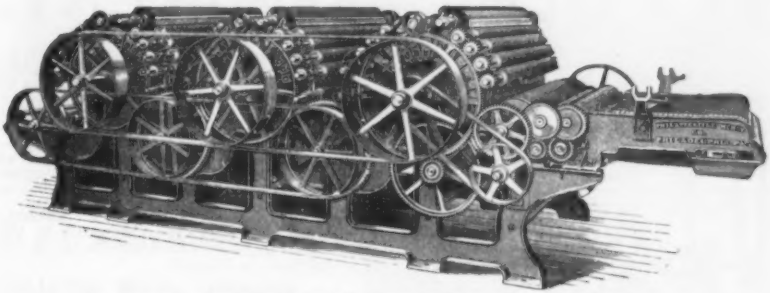

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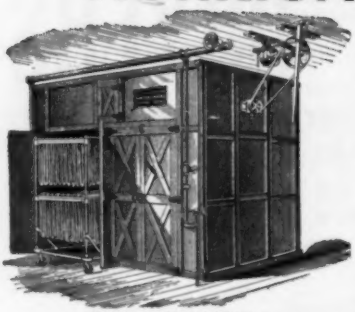

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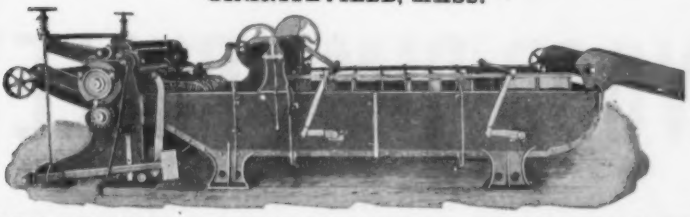

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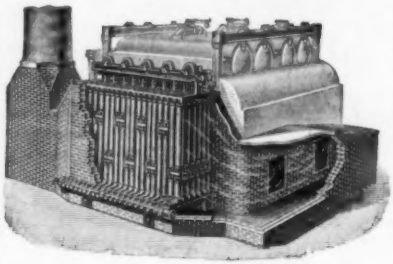

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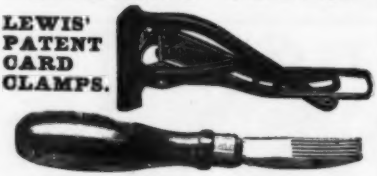

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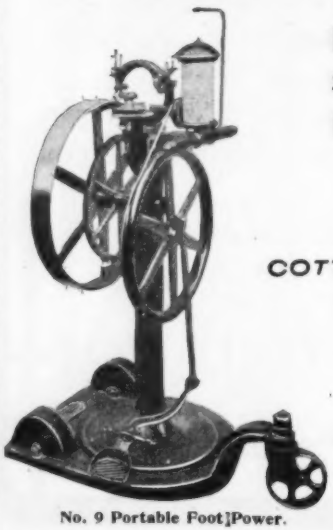

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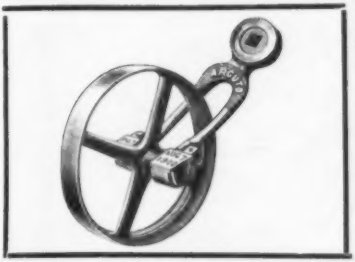

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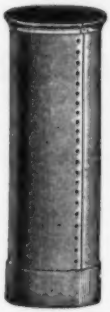

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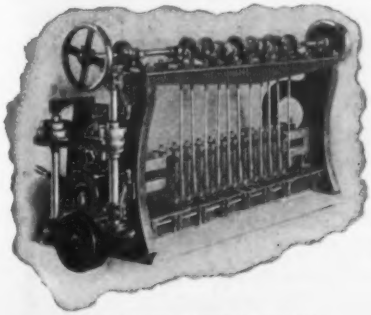

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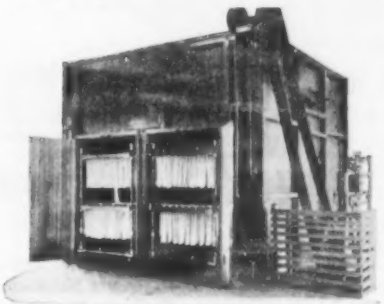

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He is also building a first-class hot air machine. Claims to deliver yarn in far better condition than most machines.

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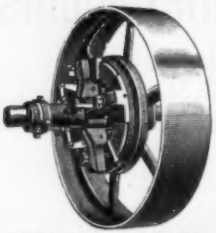

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Is a Safe Investment.
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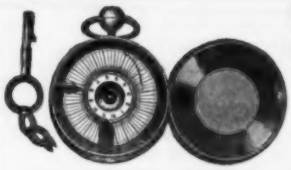

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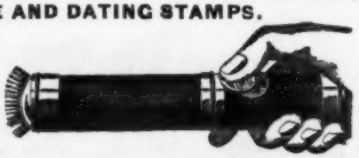

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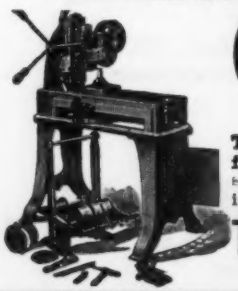

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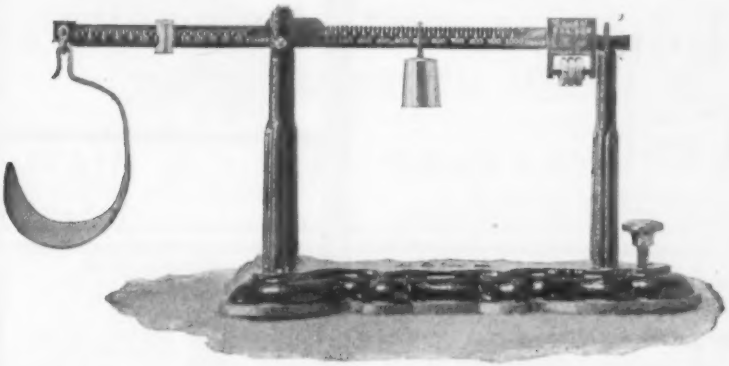

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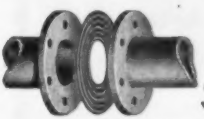

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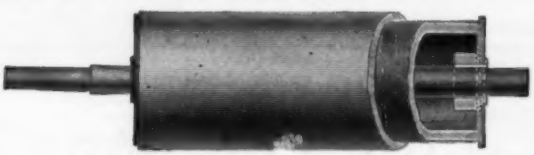

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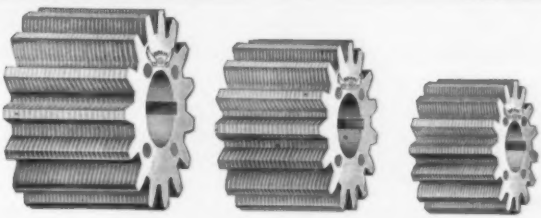

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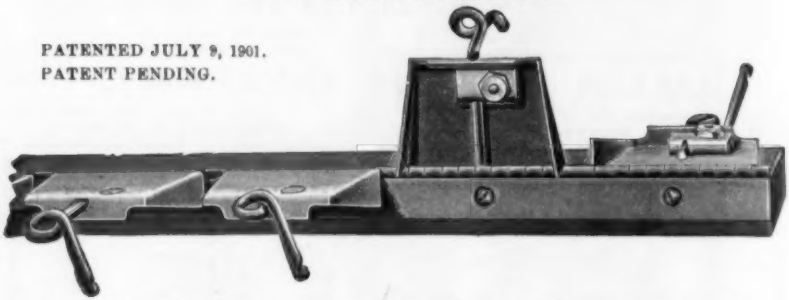

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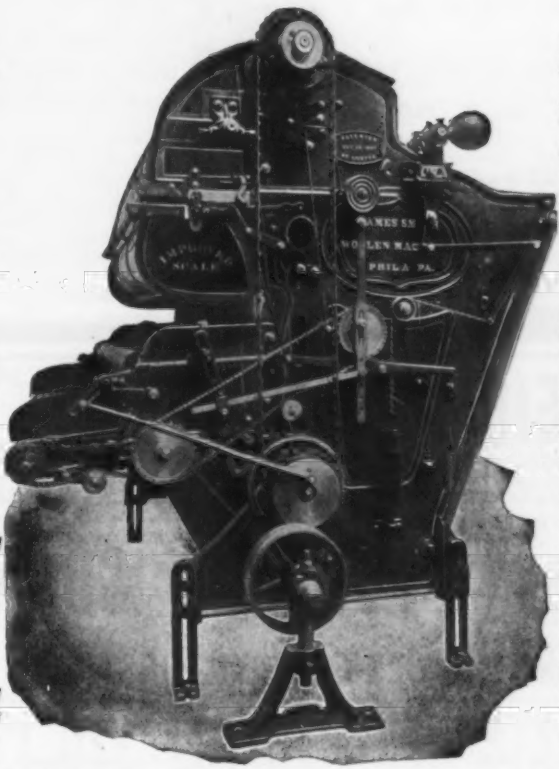

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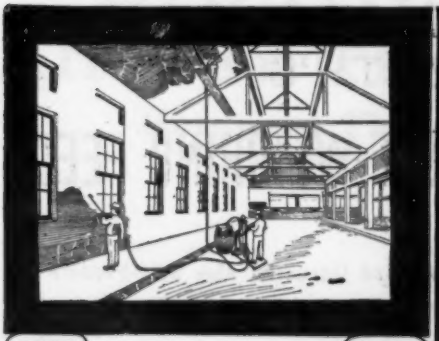

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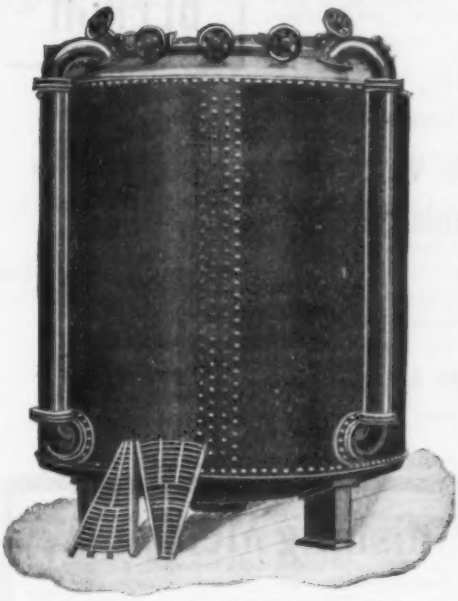

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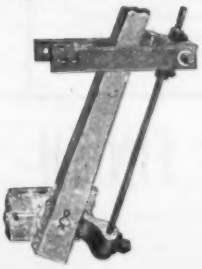

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Issued Oct. 28, Nov. 4, Nov. 11 and Nov 18.

Apparatus for Bleaching, Dyeing, etc. 713,755. Jacob Failenschmidt, Mulheim on the Ruhr, Germany, assignor to C. Roesch & Co., Ltd., Druisburg, Prussia.

Apparatus for Measuring the Length of Fabrics. 713,524. F. C. Stephen, Crimmitschau, Germany.

Cloth Finishing Machine. 712,210. Frank Stiner, Lawrence, Mass.

Cloth Finishing Machine. 712,309. Frank Stiner, Lawrence, Mass.

Cotton Stalk Cutter. 713,241. William Qualls, Lollie, Ark.

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Electrical Warp Stop-Motion for Looms. 713,836. W. H. Baker, Central Falls, R. I., and F. E. Kip, Montclair, N. J., assignors to Kip-Armstrong Co.

Fabric Folding and Trimming Machine. 713,788. J. C. Goodwin, Philadelphia, Pa.

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Hosiery Machine. 713,609. Felix Corpelet and Albert Dupre, Romilly, France.

Knitting Machine. 713,709. Walter Stafford and Robert C. Holt, Little Falls, N. Y.

Loom Shuttle. 713,587. Joseph Auth, Covington, Ky.

Loom Shuttle. 712,817. Hamilton Lindsay, Glenville, Ohio.

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Loom. 712,358. William Caldwell, Leigh, England, assignor to the Radax Pneumatic Tyre Co., Ltd., Warrington, England.

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Machine for Sewing Buttons to Fabrics. 712,191. Jas. T. Hogan, Jersey City, N. J., assignor to the National Machine Co., New York, N. Y.

Machine for Balling or Winding Slivers of Fibrous Materials. 711,982. William B. Lee, Bradford, England.

Manufacture of Artificial Silk. 712,756. Henry Bernstein, Philadelphia, Pa.

(Continued on page 1210.)

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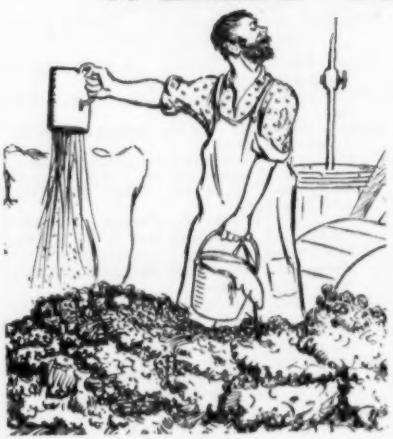

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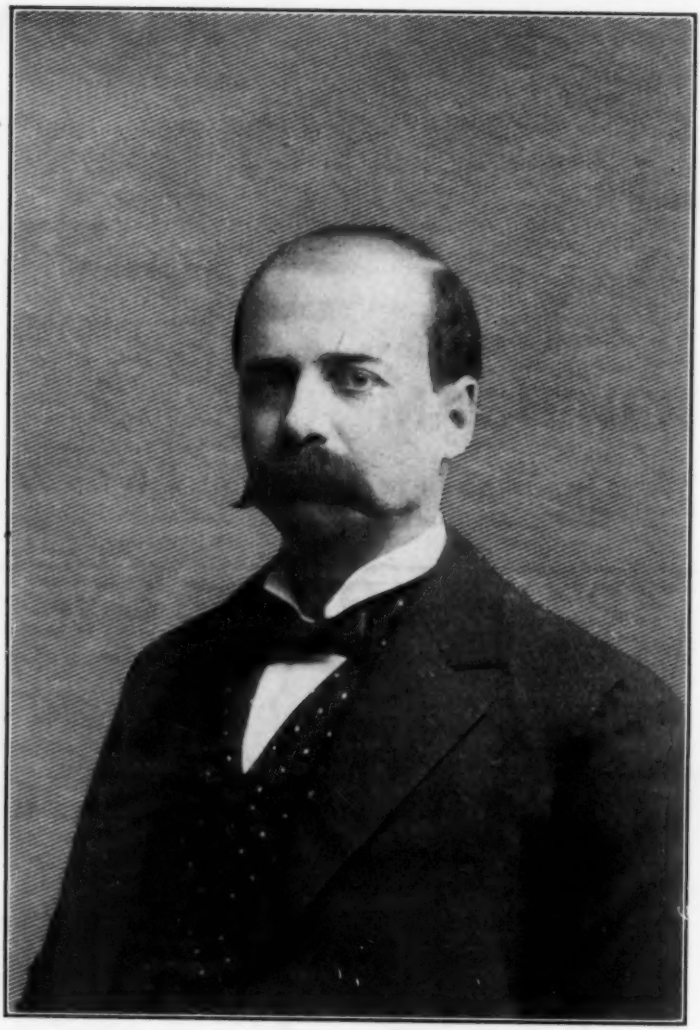

E. L. MANSURE.

TEXTILE WORLD.

Vol. XXII. DECEMBER, 1902. No. 6.

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E. L. MANSURE.

E. L. Mansure was born in Philadelphia in 1860. He began to work in a textile mill when less than twelve years old and there acquired a practical knowledge of the workings of machinery to which he attributes much of his later success. At the age of fifteen he entered the employ of William H. Horstmann & Co., of Philadelphia.

"Don't say I accepted a position," Mr. Mansure remarked, "I simply got the job."

At Horstmann's he began to show his ability as a salesman. It was found that he had an exceptional technical knowledge of the business besides a most unusual versatility of mind for a boy that had begun work in a mill at the age of eleven. He attended the night schools regularly for several years and applied himself so well as to more than make up for early disadvantages. He remained with this firm about ten years and then went with J. H. Stevenson & Co., where he was very successful.

In 1890, twelve years ago, he laid his plans to start a mill in Chicago for the manufacture of upholstery trimmings. He had only a few thousand dollars loaned him by friends who recognized his business ability. There was but a meagre representation of the textile interests west of Philadelphia at that time and his immediate prospects were not of the best.

His friends tried to dissuade him, but he was confident of the soundness of his judgment and set up a few looms on one floor of a building at 45 East Randolph St., Chicago. Mr. Mansure says in speaking of this time, "For two years it was pretty hard pulling; I didn't have any too many luxuries of life, I can assure you." Then business expanded, the World's Fair came next, and other floors were leased in the building until he occupied the entire structure. In less than four years the annual business amounted to $250,000—perhaps the record for rapid growth in the textile industry.

Since then he has formed a corporation, the E. L. Mansure Co., taking in two of his employees, H. F. Walliser, who is now vice-president and P. P. Rudhart, secretary. The business has been moved to a six-story building at Lake Street and Michigan Avenue with a floor space of 70,000 square feet, where they have the largest textile mill of its kind in the United States and perhaps in the world. About a year ago a New York office was opened and the Eastern branch at once secured a volume of business of no mean proportions. Today their business in the United States extends from coast to coast and a few months ago they started a foreign trade that is rapidly developing.

Mr. Mansure is particularly enthusiastic on the subject of western industry and says; "There is every reason for textile mills of various kinds to locate in this territory. For some lines there are decided advantages. Look at the million dollar concerns that have developed from almost nothing in recent years; I could mention a dozen or two. Business has expanded enormously and a good

share of this additional trade is concerned with these western textile factories."

Mr. Mansure married in 1893 and has one son. He is a member of the Union League, the Washington Park and Kenwood clubs and a life member of the Chicago Athletic Association. Politically he is an ardent Republican but his activities have always been confined to his business.

The story of his success is interesting because it illustrates a salient fact of commercial life; that the man who is spurred on by sincere enthusiasm for a cause will generally have that cause redound to his benefit.

MONTHLY COMMENT.

Machine Picked Cotton. In another part of this issue appears a statement of the attempt to pick cotton from the cotton plant by machinery instead of by hand. The cotton from the bale and from various machines in the mill is illustrated, and while the description is of much interest, it should be borne in mind that the solution of the problem of cotton picking by machinery rests not alone upon the quality of the cotton. The machine must enable the cotton to be picked as rapidly, as well and at as low a cost as is possible with the hand labor now employed. Further information on these points will be awaited with much interest.

English Labor Delegation to the United States. The party of representatives of English working men now in this country include a number of textile workers, who have been industriously inspecting the conditions in New England mills during the past month. The programme laid out for study includes the American public school system as well as industrial conditions from the laboring man's point of view. It is gratifying to learn that the Englishmen are meeting with a cordial reception by our manufacturers and are receiving excellent facilities for inspecting American mills and securing information which they desire. Their report to be made on their return to England will be received with as much interest on this side of the Atlantic as in England.

Philippine Cotton Trade. The statistics of cotton goods imported into the Philippine Islands in April of this year show no increase in the insignificant proportion of these goods supplied by the United States previous to that month. The following table shows the share of each of the principal exporting countries including the United States:

Great Britain....	46.2 per cent.
Spain	14.9 per cent.
Germany	9.8 per cent.
France	2.1 per cent.
United States....	2 per cent.

The Mercerizing Case. The suit brought by the American Mercerizing Company against alleged infringers of the Thomas & Provost patents, owned by the former, has come to a hearing, and the plaintiff's side of the case is now being presented before a master in New York. Mr. A. D. Little of the firm of Little & Walker of Boston, is the chemical expert testifying for the American Mercerizing Company, and Prof. C. F. Chandler of Columbia College is the chemical expert witness for the Hampton Mills, who are the defendants in the suit. Both parties to the suit have agreed as to the process employed by the defendants, and the witness for the plaintiff has been testifying to prove that this process is an infringement of patents in question. The case is an important one and the outcome is of great interest to the trade. It will doubtless be a number of months yet before it is concluded.

It is greatly to be desired that a conclusive verdict will be reached, and the question settled decisively on its merits and not on any legal technicality.

Silk Raising in America. Much interest is shown in certain parts of the country in the raising of silk, and the infant industry is receiving the active encouragement of the Department of Agriculture. In 1900 there was imported into the United States unmanufactured silk valued at more than $45,000,000. This is a very large sum, and it would undoubtedly be a great advantage if this silk could be raised here at a profit.

Soil, climate and a supply of mulberry trees are not the only essential factors in the production of silk. These must be at hand to ensure the production of silk cocoons, but these cocoons are of no value unless converted into waste silk by machinery, or reeled by hand. Raising silk cocoons in the United States to be torn into waste is too absurd a proposition to be considered. The reeling of the cocoons is a slow hand process, and the cost is practically all for labor. In the chief silk producing countries today, France, Italy, Asia Minor, China and Japan, the wage ratio is far below the American standard. There is no duty on silk coming into this country, consequently to compete with the cheap labor of the countries above mentioned, the American wages must be brought down to their level. Until this is done the silk raising in America will remain a subject of far more theoretical than practical interest.

The problem was very well stated recently by an experienced silk manufacturer in reply to an enquiry from a resident of Louisiana who had become enthused by the dazzling prospect of wealth to be secured in that state by raising silk. "Silk cocoons can be raised in Louisiana as well as in Asia or Europe," ran the reply; "possibly a little better in view of the fact that the stars and stripes will float over the industry, but when you come to reeling the cocoons into a thread for further use, you will find the high cost of labor will prevent further progress in the enterprise."

The Wool Supply. The National Association of Wool Manufacturers have recently issued their Annual Wool Review, in which is made the following estimate of the domestic wool clip of the United States for 1902:

No. of Sheep,	42,184,122
Average Weight of Fleece,	6 1/2 lbs.
Shrinkage Fleece Wool,	60 per cent.
Shrinkage Pulled Wool,	33 per cent.
Wool in the Grease,	316,341,032 lbs.
Wool Scoured,	137,912,085 lbs.
Value Fleece 1901, per lb.	41 1/10 cents
Value Fleece 1902, per lb.	45 1/10 cents
Value Pulled 1901, per lb.	36 7/10 cents
Value Pulled 1902, per lb.	39 7/10 cents
Total Value 1902	$60,679,127

The report states that a decline has taken place in the sheep industry in every state of the union except Kentucky, Montana and Wyoming. In Kentucky the apparent increase is ascribed to an error in the figures. In Montana and Wyoming the reported increase is said to be confirmed by personal inquiry.

In Texas, according to the Review, the decline in the wool growing industry is remarkable, but 1,440,000 sheep being found in 1900, where 2,786,688 were reported in 1899. The reason given is that Texas land has been fenced in and used for farming during recent years and range sheep raising has declined accordingly.

The Review states that from all sources comes confirmation that the number of sheep east of the Mississippi continues to decline. It is stated that most of the states have reached their limit of wool production and that "the situation offers little encouragement that we are likely to have a domestic supply of wool equal to the domestic requirements. The wool consumption of the present year is the largest in the history of the country, while the domestic supply is not as large as it was ten years ago."

A table gives the figures for each

year since 1890, obtained by adding the estimated production to the estimated imports of wool (including the estimated wool equivalents of the imports of goods). These figures of the wool retained for consumption are:

For 1890	lbs.	345,966,435
For 1896	lbs.	502,485,908
For 1899	lbs.	314,671,445
For 1901	lbs.	371,694,336

The Review states that "it is evident that the needs of the manufacturers are increasing faster than the domestic supply."

Another table based on census figures gives the consumption of wool.

For 1890 as	lbs.	548,167,332
For 1900 as	lbs.	483,865,236

A second table based on averages for five-year periods gives the annual wool consumption.

For 1888-1892 at	lbs.	424,481,568
For 1893-1897 at	lbs.	509,984,118
For 1898-1902 at	lbs.	397,554,309

The gradual improvement in the statistical position of wool is noted also the damage to the Australian wool clip due to the continuance of the drought. One authority is quoted to the effect that in Australia in 1901 there was 90,990,761 sheep as compared with 120,432,019 in 1895, a loss of 29,441,258, or 24 4/10 per cent. The South African supply has also been greatly reduced owing to the war.

There is quoted the opinion of the Yorkshire (England) Observer that the coming River Plate clip is to be a large one, although not larger than the average for the past few years.

The opinion is expressed in the Review that the world's wool supplies are to be taxed in the immediate future by the increasing demands of consumption, and that the steadiness of prices in the face of this is due to the lessons learned from the boom of 1899 and not yet forgotten. The Review contains much valuable information regarding the wool industry and bears upon its face the proof of the patience, industry and intelligence exercised by Secretary North in its compilation.

It is much to be regretted that the wool statistics of this and other countries are not based on more reliable information. The accuracy of the figures is involved in much doubt because they are to such a large extent based upon estimates and allowances for unknown factors. This is the more regrettable because they are at once seized upon by both the friends and foes of protection and used in the discussion of the tariff and kindred topics as a basis for conclusions which their author would be the first to disclaim.

The statistics given in this Review are obtained by correspondence with a large number of wool growers throughout the country. While we have no disposition to question the good faith of the growers in making replies we submit that it is a test to which no industry should be subjected. What would be thought of statistics of stocks of woolen goods compiled by correspondence with manufacturers or commission agents. The liability of error among so many individuals and the natural desire to have a small total announced because of the favorable effect on prices would render such a census utterly worthless.

The method of estimating the pulled wool is an example of the uncertainty in which the figures are involved. The census figures are first taken to show that in 1900, of every 100 sheep in the country 35 were lambs. Then from the figures as to the number of sheep in the country last year an estimate is made of the number of lambs. From the number of last year's sheep and lambs thus obtained is subtracted the estimated number of this year's sheep and the result accepted as the number of sheep and lambs slaughtered. After allowing 2 per cent. for loss from accident, dogs, etc., the remainder is used as a basis for estimating the amount of wool pulled from skins. The weight of wool per skin is assumed to be 2 pounds because the census reports give 1 43/100 pounds as the

average in packing establishments, the 57/100 being added on the theory that the wool reported by the census was probably reported in a partially cleansed condition.

Again the claim that the Texas sheep industry is declining is based upon a comparison of this year's sheep, estimated by the Wool Association, with the estimate of the sheep in 1900, made by the Department of Agriculture, although the Department statistician, according to a letter published in the Review, seems to doubt the value of counting sheep.

Turning to the statistics of wool consumption we find more wool apparently consumed in times of depression than when the country is prosperous. This is so contrary to the plain every day experience of wool consumers as to need no contradiction.

The wool statistics based on these uncertainties are scattered broadcast and cited as proof of the decline in wool growing and the necessity of removing the wool duties, which as a matter of fact would destroy the industry.

That free wool does not necessarily mean unalloyed happiness and complete prosperity has been proved by recent experience. On the other hand the actual cost of the wool duty to the people is insignificant. Estimating, for illustration, the cost of all the new wool consumed in this country in 1902 at $85,000,000 we have $1.06 as the cost per capita.

As the American level of wool prices is not far from 30 per cent. higher than the value abroad, this would mean that the annual tax from the present duty on wool is but 26 cents per capita of our population.

The unequal distribution of heat and moisture throughout Australia and the frequency of revolutions in South America are sufficient reasons for the most strenuous efforts to make the United States independent of these, the chief sources of the world's wool supply. We already enjoy a home supply of cotton which is at once the envy and the necessity of all other countries.

Nature has not been as generous in supplying the world with wool as with cotton. It is a fact that needs no demonstration, that if the wool supply is to be maintained it must be fostered and encouraged. Instead of looking to the foreign sources of supply, which are demonstrated uncertainties, we should apply every possible means of increasing the domestic clip.

What then is the chief reason why our wool clip is no larger? Address this question to any one who has ever kept a flock of sheep and the invariable reply will be:

Dogs.

The decrease of the wool clip because of this evil is not to be measured by the number of sheep actually killed by dogs. The certainty that sheep will be so killed deters farmers in every state from engaging in wool growing. Relieve the industry from this danger and the flocks would multiply on every hand.

The danger from dogs increases with the settlement of a country and it is chiefly for this reason that the abandonment of range sheep raising means a decrease in the wool supply from certain districts. The protection of the domestic wool supply from this evil would seem to be as proper a subject of federal authority as the protection of cattle from the foot and mouth disease, of which we have recently had an illustration.

Let the first measure to increase our wool supply be the enforcement of a dog law.

The Metric Force Bill was reported favorably to the House of Representatives last winter and is now before that body for consideration. Our discussion of the metric question since February has, we believe, added to the fund of information regarding the effect that this proposed change in our weights and measures would have upon the textile industry. There are

certain points on which most of the opponents and advocates of the metric system would probably agree:

First, that as far as the textile industries are concerned the weights and measures of Continental Europe are at present involved in a most serious disorder, by reason of the mix-up of the old with the metric standards.

Second, that the superiority claimed for the metric over the English system in making textile calculations is not as great as has been claimed, and that in some repects the English system is superior.

Third, that the persistence of established units of weights and measures in France after more than a century of compulsory law, proves that the period of transition during which we would be compelled to use both English and metric units, is of indefinite extent and, instead of being a question of a few years is likely to cover a number of centuries.

Fourth, that the English units of the present time are by far the leading standards of the world for textile weights and measures, and that their use is not decreasing, that in some branches such as the linen and the cotton, the English units are now known and used throughout the world.

For more than thirty-six years the following has been the law of the United States:

"Be it enacted that from and after the passage of this act, it shall be lawful throughout the United States of America to employ the weights and measures of the metric system; and no contract or dealing, or pleading in any court, shall be deemed invalid or liable to objection, because the weights or measures expressed or referred to therein are weights or measures of the metric system.

"And be it further enacted, that the tables in the schedules hereto annexed shall be recognized in the construction of contracts, and in all legal proceedings, as establishing, in terms of the weights and measures now in use in the United States, the equivalents of the weights and measures expressed therein in terms of the metric system; and said tables may be lawfully used for computing, determining, and expressing in customary weights and measures the weights and measures of the metric system."

Since this law was enacted the proportionate use of the metric system has not perceptibly increased, and it is to increase such use that the compulsory bill now before Congress has been introduced. It applies to departments of government, but it is confessedly the entering wedge for the compulsory use of the metric units throughout the country.

Speaking of the province of law in regulating weights and measures, John Quincy Adams in 1821 in a report to Congress used the following words:

"In this conflict between the dominion of usage and of the law, the last and greatest dangers to the principles of uniformity proceed from the laws themselves. The legislator having no distinct idea of the uniformity of which the subject is susceptible, not considering how far it should be extended, or where it finds its boundary in the nature of things and of man, enacts laws inadequate for its purpose, inconsistent with one another; sometimes stubbornly resisting, at others weakly yielding to inveterate uses and abuses; and finishes by increasing the diversities which it was his intention to abolish, and by loading his statute book only with the impotence of authority, and the uniformity of confusion."

We have frequently had occasion to refer to this famous report by John Quincy Adams, made in 1821 after he had studied the metric question for four years. Although made over eighty-one years ago the metric doctrine of Adams is no more out of date than is the Monroe doctrine to which he also gave expression. Both have gained in strength by the developments since they were announced. Both have had far-reaching influence, one in protecting America's political institutions from foreign attack, the other in maintaining our weights and measures free from the admixture of foreign standards.

The wisdom of Adams's metric doctrine receives striking confirmation in

the remarkable address to the French people by M. Paul Lamoitier, which appeared two months ago in L'Industrie Textile, a leading textile journal published in Paris, and which was prompted by the August article in the Textile World, "Is It Worth While?" and "Textile Calculations in France." M. Lamoitier's statements supply conclusive proof of the failure of over one hundred years of compulsory metric law in France.

In reading this address it should be borne in mind that the writer is a native of France, an experienced textile manufacturer and a strong advocate of the metric system. His statement of the condition of European weights and measures is far stronger than that of any other writer in this magazine and he speaks with unquestionable authority.

We have confined our discussion of this question to its application in textile manufacturing alone. In that industry in 1900 there were in the United States 1,029,910 employees, turning out an annual product valued at $1,637,484,484. Rated by the number of employees it stands at the head of the country's manufactures as classified by the census bureau.

Speaking in behalf of this industry, which, vast as it is, is relatively insignificant when the full effect of such a radical change in weights and measures, is considered, we ask the law makers at Washington if it is not the part of wisdom to defeat this metric bill.

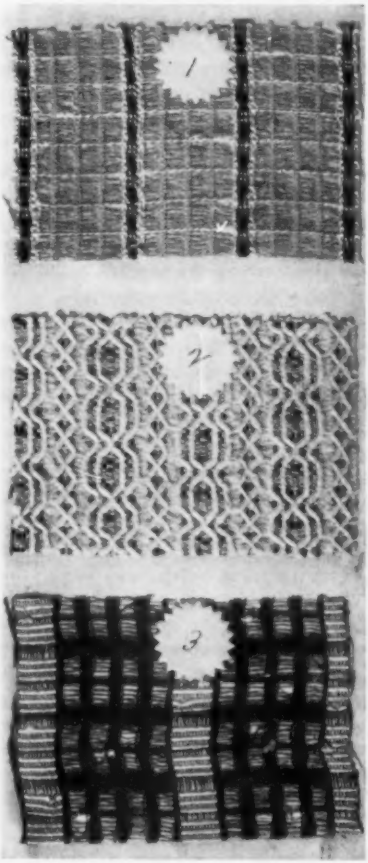
Seasonable Fabrics.

Woolens and Dress Goods. The men's wear woolen and worsted goods division of the market has been particularly dull and lifeless during the past few days and little activity is looked for until weather conditions shall have become more favorable. Clothing manufacturers, in the first place, were slow in getting out with their sample lines and the unseasonable weather which prevailed during the late fall months was not particularly conducive to good retail business, with the result that the retailer was not inclined to meet the clothing manufacturer's salesman with open arms when soliciting business for next season and consequently, the primary market has developed but slowly and duplicate orders are being received only in very limited numbers. Notwithstanding these conditions, the tone of the market still continues firm and advances have been made in many instances. The original order business was of such a nature as to assure manufacturers of sufficient business to keep their plants running on full time for some time to come, consequently the existing conditions at the present time so far as duplicate order business is concerned has little or no effect on the market.

Some attention is already being devoted to lines of heavy weights for next fall, but it is too early, as yet, to say anything about styles or prices. Agents are busy examining sample blankets and selecting styles, but it will be some time yet before anything definite can be said as to the nature of the lines now under consideration. Kerseys in blacks, blues and browns are about the hardest things to find in the market today, and buyers are unable to pick up very much in the way of desirable cloths of this character for immediate delivery. Kerseys in 24 oz. to 26 oz. weights at from $1.42 1/2 to $1.75 are almost impossible to procure and prices have been advanced on very many of the lines. It has been undoubtedly a strong kersey season and there is little doubt that the popularity of this cloth will continue into another season.

Prices in the dress goods market have ruled firm with some advances on staple lines of cheviots, zibelines, etc. The demand has been unusually strong for everything in the way of whites and creams in mohairs, sicilians, bedford cords and similar goods and the market has been well cleaned

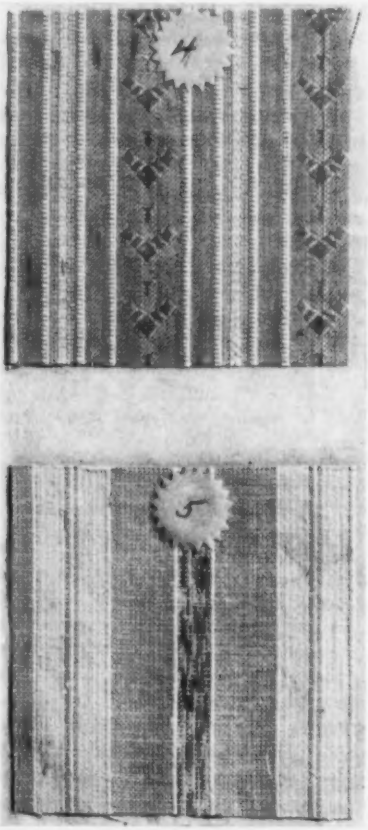
up along these lines. Orders have been placed on a very satisfactory scale and a good business is fully assured. Fancies continue to increase in favor and the coming season promises to be one of the best which has been experienced for several years. Styles range from the heavier weaves, such as zibelines and cheviots, to the thin, sheer goods, and open work



linen, silk and wool combinations have also been favorably received. Waistings in goods of this order have been freely bought and their success is fully assured. At Figs. 1, 2 and 3, are presented three different styles of the class of goods referred to which, in 27 inch width, range in price from 42 1/2 cents to 60 cents per yard.

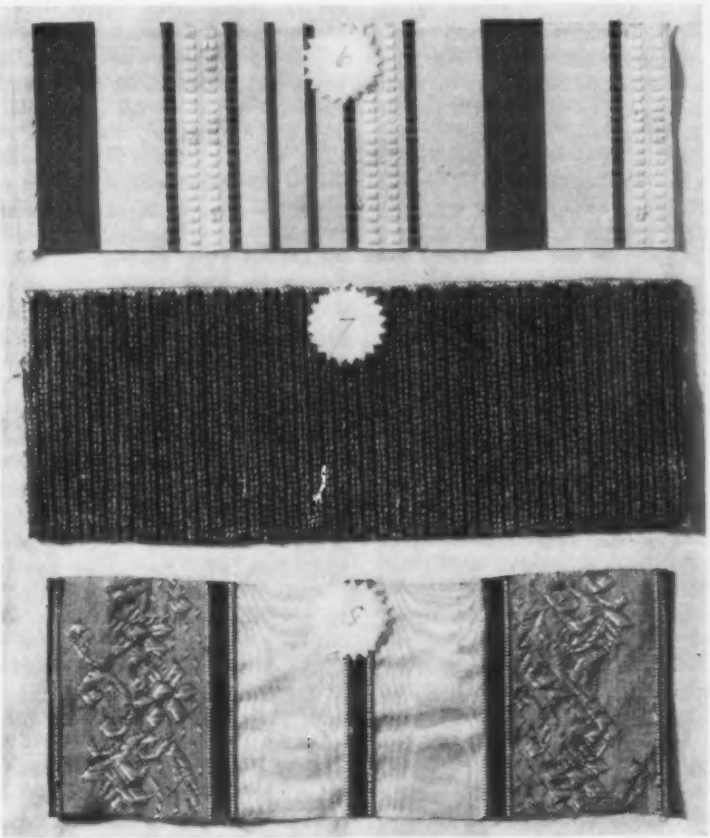
Wash Goods, Ginghams, Etc. The advance orders on wash goods which have been booked up to the present time are largely in excess of the orders booked up to the corresponding time last season, and there is every indication that the coming spring season will witness an excellent business on wash goods of every description. The demand for prints for spot delivery continues fair, although necessarily the demand for goods of this character is not very great at this season of the year.

New lines are being brought out from time to time in the different classes of wash goods and new patterns are being added to the already well placed lines, many of which are worthy of note for beauty and novelty of design. At Fig. 4 is shown one of



the new patterns of the Aberfoyle Mfg. Co.'s silk tissue, which has been a good seller at 28 cents and at Fig. 5 is shown one of the new Dresden stripe patterns of the Johnson Mfg. Co.'s Sea Island Madras. This cloth, at 9 1/2 cents net, has been well sold up far into next season.

striped and corded taffetas and Louisienes have also been good and large quantities of goods on this order have been disposed of. At Fig. 6 is shown a white and black striped Louisiene, with both colored and woven stripes on which Grimshaw Bros., selling through S. Peieris & Co., have done



Silks and Velvets. The silk market still continues firm with the demand exceptionally good and prices well sustained. The demand for goods for immediate delivery has been largely along the line of crepes de chene, both plain and embroidered and soft clinging fabrics on this order. Whites and creams have been the best selling shades, while greys have been exceptionally good. Black and white a good business at 70 cents regular in 20 inch width.

In velvets the demand has been almost unprecedented and desirable shades have been very difficult to procure. Velveteens and hollow cut cords are also strong and the demand is likely to be well sustained. Hairline striped velvets have been one of the novelties of the season and have met with excellent success. At Fig. 7 is

shown one of the velvet stripes on which A. Wimpheimer & Bros. have had an excellent business at 80 cents regular in 17 inch width. For millinery purposes this style has been much in demand.

The prospects for a successful ribbon season are unusually bright and advances are being asked all along the line. Advance orders for spring delivery have been of a very satisfactory nature and there is every indication that fancies will be in great request. At Fig. 8 is shown one of the novelties from the line of Kridel Sons & Co. This is a moire striped Louisiene with fancy jacquard border in scroll and floral design and has been one of their good sellers at 4 1/2 cents per ligne.

New Patterns from Yorkshire.

BY S. B. H.

Truly it can be said that like the writing of books so in the making of patterns there is no end. Speaking this week with an American over in Bradford on business, he remarked that everybody seemed to be wearing dark grey and Oxford overcoating, even the ladies wearing as slack hanging jackets or coats the same class of material. His observation is correct to the very letter, for turn which way you will, you find both big and little, aristocrat and the farmer's boy, all wearing "pinhead" effects in very dark greys, steels, and Oxfords.

I am really surprised how the old has been revived. About the present cloths there is nothing whatever new, in fact, they are as I heard a man say the other day, as old as Adam. But they are all the better for being so. The same shades and the same layouts we have had a quarter of a century ago, but hardly the same blending of materials. I take it that today's success is due to the putting together of the right kind of material, for certain it is that both in sightliness and handle the party who first brought out the cloth had hit the popular taste.

First of all we have in the cloths a nice agreeable warm shade suitable for the fall and winter season of 1903, and our manufacturers who are preparing to open shortly, their patterns are mostly made up of these very things, the six designs we have under survey today being taken from a leading maker's cloths. This manufacturer in Yorkshire has a good sized plant, and is nothing at all if not up-to-date. These cloths have sold so well for the present fall season that he is showing them for next season, and is quite confident of another successful season, as repeats are coming to hand very extensively. It is because of this I will try to give readers a brief description of the goods.

In the first place it is worthy of note that all these fabrics are made out of cheap crossbred stock in direct contrast to merino stock which today is figuring at such high prices. The maker of these samples confronted with the price question and the serious difficulty of producing popular cloths at old prices, turned his undivided attention to crossbred wool, and I am happy to say he has succeeded wonderfully. The price of these cloths is such that they were bound to compel the attention of wholesale fabric buyers, and because of the cheapness as well as general utility, they are selling like penny cakes in a famine.

First of all as to the yarns used. I asked a friend what his blend was composed of, and he instantly replied 25 per cent. of medium crossbred wool, and 75 per cent. of medium stockings, total 100 per cent. What a simple combination in materials that is. The stockings they buy just as they are gathered either from a rag dealer or at the Dewsbury rag sales, and dye them black in their own mill. The same with the crossbred wool. I know for a fact that the crossbred wool used in these blends was New

Zealand scoured crossbred and did not cost more than 14c. per lb.

The stockings would be worth about 8c. and were pulled on their own machinery. Readers will therefore see that to begin with the cost of the stock was very low, meaning that the finished product would be correspondingly cheap. The warp was spun to 2½ runs, in other words a nice average yarn, the weft being spun a little firmer 2¾ runs. These particulars give a fairly reliable idea as to the thickness of the warp and weft yarns. The weave throughout was the four shaft twill.

In making these cloths, the idea is not to produce a big, thick, boardy cloth, but a cloth rather spongy and pliable. Only 36 picks per inch are put in, the warp being set rather coarse in the loom, and weighing when finished 18 ounces per yard. This means that either for ladies' long slack-back jackets, or gentlemen's overcoats they can be employed and adapted as readily for one as the other.

There is illustrated below six different patterns, and in each cloth there is exactly the same classes of yarn used. Everything is done in the warp arrangement, and the varied pattern effect is all created in this way. That being so we will look at the way the cloths are put together, for by so doing American readers will see at once how wide is the field for pattern alteration and arrangement.

Our first pattern is simply warped one white, one black, this being sufficient to give a "pin-head" effect. This arrangement gives us a rather light shade effect, but the white yarn used is not a snow-white, but rather a grey white, kept on the light side. In getting this grey white I should obtain the color by blending say 75 per cent. of white and 25 per cent. of light or mid grey together, and then you obtain the very shade that is selling.

In pattern No. 2 the warping is simply done two black, 1 white, this I think making a smarter cloth than the previous one. Here there is less white to be seen, but just sufficient to relieve the black and make the cloth attractive.

Cloth No. 3 is a warping of three black, one white, and naturally we get a darker shade still, but the cloth that is being very extensively worn. In fact Nos. 2 and 3 are the best selling cloths for men's overcoatings.

Cloth No. 4 we see at once gives us something more suitable for ladies' long draping coats than for men's overcoats, and right tasty it looks. This cloth is made two white, two black. A four-end twill with this arrangement always gives that peculiar effect so familiar to every manufacturer, and no better combination can possibly be made.

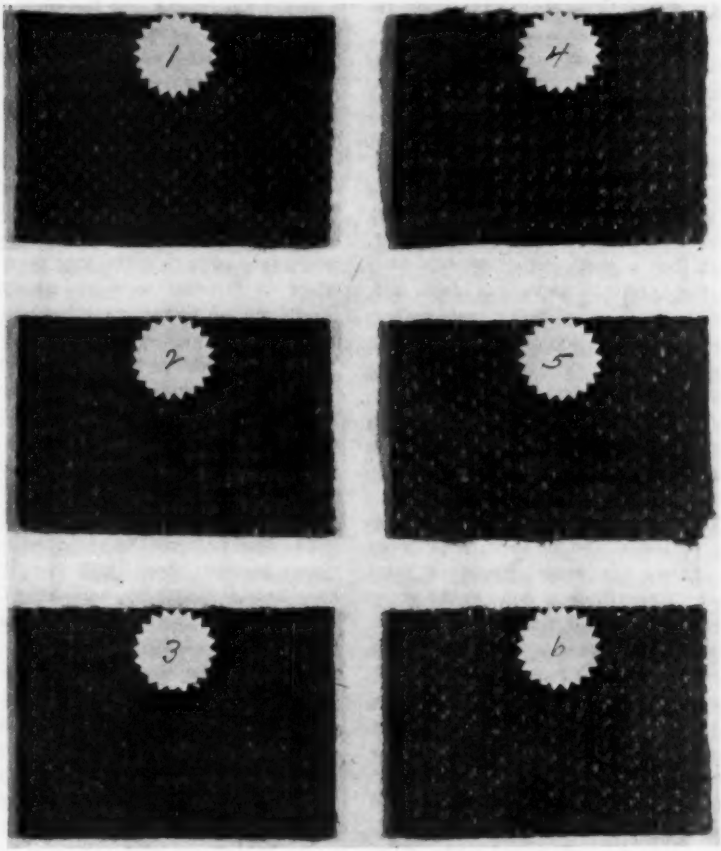
The next cloth is rather more elaborate, the warping being as follows: Two black, one white, one black, one white. This gives a broken stripe effect, but comes up very well and meets the wishes of those who are particular for a little pattern effect.

The last pattern, No. 6, gives us a more decided stripe still, the cloth here being made by arranging the warp threads as follows: Two black, one white, one black, two white. In all these cloths there is much to be said that is of a very fascinating order, and if they are nicely made, well steamed in finishing to put condition into them, they will be found to produce some very good and effective cloth. The weft is all black.

The above fabrics are made 55 inches wide, weigh 18 ounces to the pound, the manufacturer's price being 2s. 3d. (54c.) per yard.

One of the leading features of the overcoatings for the next fall will be the presence of a good many cloths of the above order, and as far as I can determine, judging by the increasing values of fine wools, "Cheviot" things bid fair to figure conspicuously both in men's and women's wear

woolens. The fact is people in this country cannot afford to pay long prices for their garments. The wages of working men are somewhat small and limited, hence circumstances compel most of our operatives to think twice before buying. This is compelling our manufacturers to meet that demand by producing something good, warm, and yet cheap.



Foreign Samples.

The light weight season of Le Moniteur des Echantillons de L'Industrie Drapiere, will begin in January and subscriptions to this valuable journal should be sent in at once in order to insure prompt receipt of the first issues of the new volume.

It furnishes each season to its subscribers four hundred samples, showing the latest European designs for men's wear goods. Each sample is accompanied with full particulars regarding its construction including threads in warp and filling, size of yarn, weave, color pattern, quality, material, etc. It is issued bi-weekly and enables manufacturers to keep in close touch with the European market. The subscription price is $11.00 per season of six months. Orders may be sent to the office of the Textile World.

The Knit Goods Situation.

The knit goods market during the past few days has been fairly active but, owing to the unusually warm weather which prevailed during the greater part of November, heavy weight underwear moved very slowly at second hands with the result that manufacturers have been enabled to catch up with their orders to a certain extent and the threatened scarcity of heavy weight underwear has been averted so far as the immediate present is concerned, although a few days of cold, snappy weather, will tend to change conditions very materially.

The fleeced underwear situation has developed very slowly, so slowly, indeed, that a great deal of uncertainty still exists and many of the leading manufacturers are still anxiously waiting for their competitors to make the first move in the way of naming prices.

Perhaps the firmness of the cotton yarn market was one of the principal things which causes the manufacturer to refrain from naming prices, for it is well known that many of them are not, by any means, covered on yarn for the season, and there seems to be a feeling that more desirable prices, from the purchasers' standpoint, are likely to be made before many days.

If prices on fleeced underwear should be named today, based on the present high prices of yarn and the yarn situation should weaken, the result would be the demoralization of prices on fleeced goods; hence manufacturers are naturally anxious to feel sure of their ground before committing themselves. It is true that some business is being done on fleece goods, but only in a quiet sort of way without any prices being openly quoted, except in the case of a few lines, principally in the cheaper grades where prices are quoted on the open market. But any orders which are booked now are of a very unsatisfactory nature for the reason that the buyer expects to be fully protected in the event of lower prices being named; if he is not so protected, the result in the majority of cases will be a cancellation of the order, therefore there is no stability to the business which is being done, with the chances all in the buyer's favor.

The selling agent of a Southern manufacturer is on the market with a 22-gauge garment with covered seams and weighing 12 1/2 lbs. on size 42 at a price of $3.12 1/2. Another garment, also from a Southern mill, is being offered at $3.07 1/2, which is 7 1/2 cents advance over last season's price on practically the same garment; but none of these are what can be called "Full Standard Fleeces" and none of the higher grade lines are as yet being quoted, although it is said that a certain line, which sold last season at $3.50 has been quietly quoted at $3.60 for next season.

On the general line of wool goods and men's ribbed garments, practically no business has, as yet, been done, although it is expected that prices will be slightly higher than last season's figures.

Manufacturers of spring lines of underwear are now hard at work on their orders and the situation seems to be generally satisfactory. Reports from the jobbing trade throughout the country are of an encouraging nature, and a good season's business is confidently looked forward to in all parts of the country.

The hosiery market for the past few weeks has ruled rather quiet, but nothing else could be expected with the spring's business practically over and new lines for fall of 1903 not yet opened up. Orders for immediate delivery have been coming to hand in fairly satisfactory volume, but stocks are low and manufacturers are tardy on deliveries and prices are consequently firm and in some cases advances have been made.

Considerable attention is already

being devoted by manufacturers and agents to lines of heavy weight goods for fall of 1903, more particularly to fleeces and considerable business has already been done. Fleeced hosiery will undoubtedly occupy a strong position in the fall trade, notwithstanding that many were of the opinion last season that the demand for this class of goods was on the decline. Not all of the manufacturers are ready with their lines, but, judging from the present situation, it is safe to say that goods cannot be bought at last season's prices and buyers will in all probability be obliged to pay advances of from 2 1/2 cents on the lower end of the line to 5 cents and 7 1/2 cents on the better goods.

No change has taken place in the condition of the Chemnitz market and manufacturers are still running their plants on full time. Purchasers are clamoring for deliveries, in many cases asking for earlier shipments than originally specified, but these requests cannot, of course, be complied with, except in a very few instances.

Printed and extract goods continue to increase in popularity and embroidered hosiery will be one of the strongest features of the coming season. New lines of golf gloves for next fall are already receiving attention, or rather orders have been placed on this season's styles for next fall delivery for manufacturers have not yet had time to make up new styles. Buyers from the American market as a rule are chary about placing orders on golf gloves for next season until the present season has been farther advanced and the continued popularity of the golf glove has been assured.

Manufacturing Tests of Machine Picked Cotton.

J. T. BROADBENT,

Instructor in Yarn Manufacture, Mississippi Agricultural and Mechanical School.

Considerable interest is being shown in the South on the mechanical cotton picker, invented by A. Campbell to disperse with hand labor in picking cotton from the stalks. This machine has been tested on several plantations in Mississippi, and in the latest test at Greenville, Miss., about the end of October, there was only 3 per cent. of cotton left on the stalks after the machine had been over them; and so confident are the Southern planters of its success, that there seems to be no more obstacles to overcome except the difficulty of supplying the demand for them. There is, however, one important point which the inventor has yet to accomplish, and which by the way, he feels confident of doing, and that is preventing the fingers of the machine from gathering the leaf with the cotton. Therefore while it is a success from the planter's standpoint, it is the object of this article to give the manufacturer's view of the matter.

Following is the result of a test made in the Textile Dept. of the Mississippi Agricultural and Mechanical College, with a bale of cotton picked by a mechanical cotton picker on the plantation of Maj. Morgan in Sheparditown, Miss. The bale selected was one of the worst, and the test was made to ascertain the per cent. of waste on pickers and cards. The machines were cleaned out thoroughly and every precaution taken to make the test as reliable as possible.

The machines employed were a Kitson breaker picker with self-feeding attachment, and a Kitson finisher picker with Kirshner beater; the cotton was passed through the last named machine twice, in order to make it equivalent to 3 picking processes. The speed of the beater on the breaker was 1,197 revolutions, and the speed of the beater on the finisher 1,496 revolutions a minute. Three modern revolving flat cards were used with the following speeds and settings.

Cylinder 50 in. dia. making 160 revolutions a minute, doffer 27 in. dia.

making 12 revolutions a minute on a 60 grain sliver. The settings were feed plate to licker 12/1000 in.; mote knives, (top and bottom) to licker 12/1000 in.; licker to cylinder 7/1000 in.; cylinder and flats 10/1000 in.; doffer and cylinder 7/1000 in.

The bale was not compressed, and had a staple of about 1 inch. The bagging and ties weighed 23 pounds, while the gross weight of the bale was 325 lbs. leaving 302 lbs. of cotton to be fed to the machines.

An itemized list of weights, etc follows:—

	lb.	oz.
Weight fed to breaker picker	302	
Weight delivered from breaker picker	294	8
Total loss	7	8
This was divided as follows:—		
Droppings at feeder		11½
Droppings at breaker	5	5¾
Fly at breaker		13½
Sweepings, invisible loss, etc		9¼
Total	7	8
Weight fed to intermediate picker	294	8
Weight delivered from intermediate picker	280	6
Total loss	14	2
The droppings at intermediate were	10	
The fly at intermediate were		14½
Sweepings, invisible loss, etc. were	3	3½
Total	14	2
Weight fed to finisher picker	280	6
Weight delivered from finisher picker	271	5
Total loss	9	1
Droppings at the finisher	5	14
Fly at the finisher		13
Sweepings, invisible loss	2	6
Total	9	1

The loss per cent. on each picker is, breaker, 2.69 per cent., intermediate, 4.79 per cent., finisher, 3.23 per cent. making a total loss in picker room of over 10 per cent.

It may be well to notice the character of the waste; the whole bale seemed to be full of broken leaf and sticks, which was practically crushed into dust. At the feeder the waste was composed almost entirely of pieces of stick and motes; while on the breaker picker the droppings consisted of broken seeds, leaves, etc., with a very small per cent. of short fibre. The appearance of the lap from the breaker so far as cleanliness was concerned was little better than the raw cotton.

The large percentage of waste from the intermediate, is attributed to the combing action of the Kirshner beater, which was certainly manifested in extracting the pieces of broken plant, and while little good fibres was found in the droppings, there was a marked difference in the appearance of the lap.

In all 3 machines the percentage of dust and leaf carried to the dust room was large, but again the combing beater showed itself in this respect by opening up the fibres enough to allow the small impurities to be extracted by the air current.

The test at the cards was as follows:—

	lb.	oz.
Total weight fed to cards was	271	5
Total weight delivered from cards was	252	5
Total loss	19	
This loss included,		
Flat strippings	6	
Cylinder and doffer strips	3	5½
Licker or mote waste	7	13½
Fly	1	
Sweepings, invisible loss, etc		13
Total	19	

Making a total loss of 7 per cent. at the cards, most of which was under the licker, and no better description can be given to convey an idea of its appearance, than to say that the licker waste looked more like the product of a hay chopping machine, owing to the amount of short sticks, leaf and plant. In justice to the machine we repeat that this was one of the worst samples and manufacturers can compare its results with those of hand picked cotton, and form some idea as to the value of the new invention to them.

A SAMPLE FROM THE BALE IS SHOWN IN THE UPPER SECTION; DROPPINGS IN LEFT CENTRE; FLAT STRIPS IN RIGHT CENTRE. DRAW FRAME SLIVER AT BOTTOM.

Time is long only to those who have nothing to do.—Duboy.

The Textile Situation in Great Britain.

Special Correspondence Textile World.

Textile conditions in England may be said to be in a very decent way, and on the whole business is in a healthy condition. It is really surprising how an autumn and winter trade has opened out, and to hear tell of a mill being quiet is the exception and not the rule. I was talking only the other day with a gentleman hailing from the Huddersfield district who said that mills were as busy as they had been at any time since 1870, and manufacturers stated that they had as much work in hand as would see them well into the New Year.

The reason for this briskness is not far to seek, and undoubtedly the export demand that is being made on South African account is to a large extent responsible for the increased briskness of the woolen and worsted trades. Even round Huddersfield, Batley and Morley there is also doing a good trade, which is finding full employment for many thousands of hands. In a majority of instances low and medium fancy suitings are the class of goods which are being made, while a leading factor also to be noted is that the present fashions in ladies' coats and dress goods has for this season been extracted out of the hands of Bradford dress goods manufacturers and found its way into the hands of woolen goods makers.

All the fashion seems today to be centering upon dark grey mixtures and Oxford coatings, which are certainly occupying considerable favor at the hands of everybody. I think I never saw such harmony between men and women's wear goods in any season as there is today. All the rage seems to be for "rainproofs," designs and shades are alike, and styles are made likewise all about the same. Fairly long loose-hanging coats are the order of the day, and I saw ticketed in Bradford only this week "rainproof" overcoats for the noble sum of 19s. 6d. or $4.68! The price struck me as I passed a clothier's shop, as I thought it was extremely low, and as the coats were hanging on the outside of the door I took the trouble to examine them, and doubt very much indeed if there was a single ounce of pure wool in the fabrics. The twist employed was absolutely all cotton, and as I stood looking at the garments I thought what an idea to be actually selling such an elegant and high sounding term as "rainproof" coats in the very home of the wool industry, and these to be made entirely of cotton and mungo.

Looking at wool it is worthy of mention that Bradford has picked up nicely during the last ten days, and the market today is in a fairly sound, healthy condition. The great struggle all along has been in regard to price per pound, and within the last week business has been done at what may be called better prices. But even increased rates show no profit whatever on the cost of raw wool in London last series, and what has recently been done indicates that Bradford values are still below the cost of the raw material in other markets.

I know for a positive fact that it is only possible even yet to obtain something like 48 cents for a good style of 60's tops, but they cannot be produced at anything near that figure. All accounts agree that wool bought in Australia means a cost of 52 cents for a top put down in Bradford, but as to that figure being realized it is if anything among the good things of the future, but today to talk of making anything near that figure is simply moonshine. Also I question very much if there is any development in the consumption of merinos, for what development there is, is certainly on the side of crossbreds, and here there is a marked improvement all along the line.

The leading feature in wool is to be seen in the rapid strides forward which medium crossbred wools have made during the past month. Some tremendous weights of 44's to 50's

wools have been cleared at advancing prices, and big stocks which formed a leading feature of the Bradford trade until recently have changed hands. All the talk today seems to centre around increased prices for crossbreds at the fifth series of London sales, and 2 cents per pound more is the verdict as to what will have to be paid for medium wools in London.

Merinos have just about reached the high water mark, and it is really surprising how manufacturers and fabric buyers have tumbled to goods made out of medium wools. Bradford seems to have made up its mind not to exceed much the present limit in merinos. Spinners say positively that manufacturers will not pay the increased prices which they are demanding, and until they receive a commission from fabric buyers to support fine wools at present limits, they will not give out orders at today's rates. For this reason all the rage seems to be for something cheap, and substitution is the order of the day. There has lately been some heavy buying of English crossbred wools for America, and this month when Consul Day's return's are made, we shall also see a fairly big total representing wool shipments.

The Lancashire cotton trade continues to occupy a front rank position, and things are no worse. All the cry lately has been too dear cotton, but the continued fine weather and an absence of frost has revived a good deal of heart throughout Lancashire. Lower quotations for the raw material means the placing of many yarn and piece orders which have been hanging fire for a long time on account of too high prices, but this last two weeks has witnessed a better feeling and certainly an increase of business.

Since about the middle of September the market has been adversely influenced by the greatly improved crop outlook, and the resulting general increase in estimates of yield, the effect of which has been a decline of about 1/2d. per pound. The downward tendency has been promoted also by the weak and tired condition of the "bull" speculative pool at New York, the absurdity of whose supply and consumptive advertisements has become transparent to the general public. As prices, instead of advancing 1d. per pound, as originally indicated by the speculative manipulators, have given way 1/2d. per pound, the situation is much more normal than if the predictions of the sanguine operators aforesaid had been fulfilled, and legitimate traders are beginning to think that they may enter more freely into business without running the risk of having their operations spoiled by the antics of professional speculators.

For this reason there is a little more business doing in yarns and piece goods in Manchester, and a correspondingly increased demand for the raw material in this market; if the American speculators would obligingly betake themselves to some other sphere of operation than the Cotton Exchange there would be some chance of the present tendency towards improvement making further and more pronounced progress. As the New York "deal" is not yet entirely liquidated, spinners would do well to continue their late hand to mouth buying of the raw material, which policy has completely circumvented the designs of their natural enemies who, by means of an energetically conducted propaganda, have endeavored to persuade the spinners of the world that the American crop was so small that a cotton famine was inevitable. The only safe policy of consumers, therefore, is to buy no more cotton than is sufficient to cover their yarn contracts, and Lancashire spinners seem today in that frame of mind. Cotton manufacturers are glad at the brightened prospect in regard to cheaper raw material, and at least a 11,000,000 bales crop is looked for.

The Northrop loom continues to exercise and command a good deal of at-

tention throughout Lancashire, and the fact of there being over a hundred looms running in Hyde, it may be said that they have now passed beyond the experimental stage. Cotton operatives fear that some drastic changes are impending as a result of weavers being able to mind so many additional looms, and all the talk seems to be about a revised price list for weaving. Up to the present Messrs. Ashton Brothers where the looms are working, have paid their weavers not by the piece as the custom is, but so much per week, and before long when they have made up their minds as to how many looms a weaver can manage, a revised scale of wages is a certainty.

The Leicester hosiery trade is good, and so is the Nottingham lace trade, American demand making itself felt to the advantage of local industries.

A Guide to Knitting.

I

BY F. W. HERINGTON.

(Continued from November.)

(Copyright, 1902 by Guild & Lord.)

1. THE PLAIN STITCH (continued.)

Having already considered the plain stitch in knitting as formed by hand method and also by machinery, using spring bearded needles, we have yet to show the formation of the plain stitch using latch needles.

Knitting by hand as already stated is done by knitting needles, made of either steel or wood, they are made round, of different diameters, according to the size of the loop or stitch desired to be made, and of different lengths, according to the size or length of the fabric wanted.

When only two needles are used for flat knitting, they are only pointed at one end, but when four or more are used for circular knitting, they are pointed at each end like a pencil.

Knitting by machinery or power knitting, two kinds of needles are used:

1. Spring bearded needles.
2. Latch needles.

The spring bearded needle, Fig. 11, is so called because the beard of the needle "A" acts like a spring.

It contains a groove, "B," into which the point of the beard of the needle enters, when the beard is closed or pressed by a needle presser, and which when closed allows the loop or stitch to pass up over it, and when released from the pressure of the needle presser, the beard of the needle opens up again to allow the thread or yarn being carried into it.

The latch needle, Fig. 12, is so called because the needle has a latch, "A," which the loop or stitch opens up and closes by means of cams in the machine operating the needles.

Unlike the spring bearded needle, which requires additional mechanical means to close the beard of the needle, the latch of the latch needle is closed by the loop itself, the needle being drawn down and through the previous loop, Fig. 13 "A," the thread being fed into it, by a thread guide, the drawing down of the needle through the loop "A" closes the latch of the needle, with the thread in it, and thus forms a new loop "B," at the same time casting off the previous loop "A."

The raising again of the needle through the new loop "B," opens up again the latch, "C," of the needle, which is then ready to receive the thread, and repeat the operation indefinitely.

II. THE RIB STITCH.

The rib consists of the plain stitch, and one just the reverse of the plain, the reverse stitch being the rib.

Fig. 14—"A" "A" represent the plain stitches, and "B" "B" the rib stitches.

Fig. 14 is an enlarged sketch of stitches, every alternate loop representing a rib stitch, which is therefore called 1 and 1 rib, that is to say, one plain stitch and then one rib stitch.

Fig. 15 is an illustration of 1 and 1 rib fabric, which owing to its elasticity has been stretched out, in order to show the rib stitch, otherwise it would appear like a plain stitch fabric.

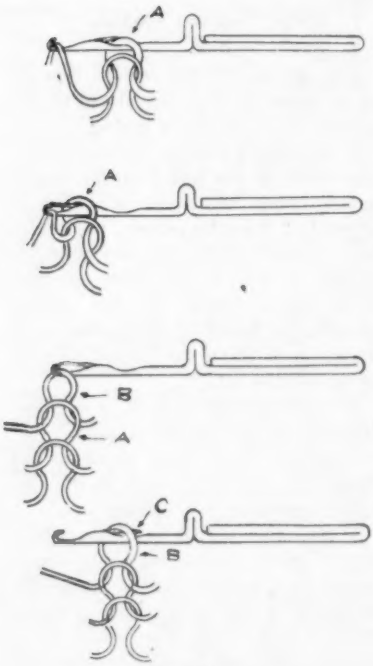


FIG. 13.

Both sides of a 1 and 1 rib fabric are alike as to the stitches, for if the fabric is reversed the stitches "A" "A" Fig. 14, would then appear as the rib stitches, and the stitches "B" the plain stitches.

The 1 and 1 rib stitch is the one universally used, because of its elasticity, for the tops of men's 1/2 hose, also for the cuffs or wrist part of shirts, and for the bottoms or ankle part of drawers in men's underwear.

It is also used for the leg part of boys' stockings, the foot generally being made with the plain stitch.

It is also used in golf stockings and in sweaters.

There are other combinations of rib stitches such as 2 and 2—3 and 1—4 and 1—5 and 1—3 and 2—2 and 1 and others, the plain stitch being referred to first, and the rib stitch last.

The 2 and 2 rib is used in ladies' underwear; the 3 and 1, in boys' and youths' stockings; the 4 and 1 and 5 and 1, in women's hose.

Fig. 16 is an enlarged sketch of the 4 and 1 rib stitch, which is made with 4 plain stitches in succession and then 1 rib stitch. "A" represents the plain stitches and "B" the rib stitches.

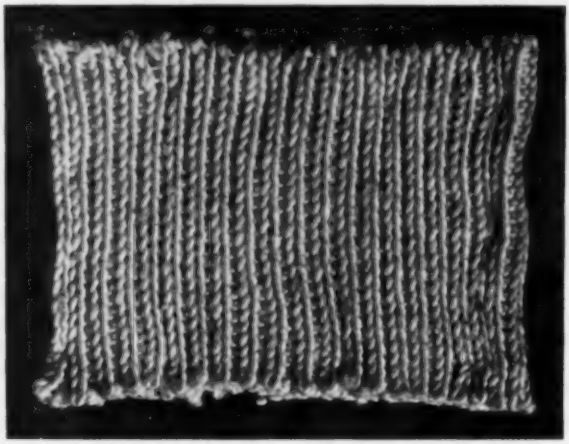


FIG. 15.

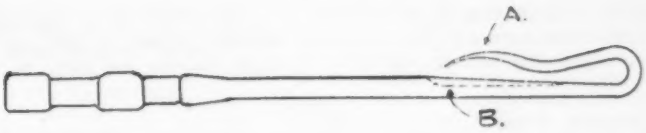


FIG. 11. SPRING NEEDLE.

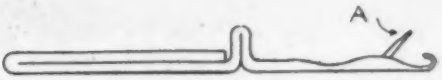


FIG. 12. LATCH NEEDLE.

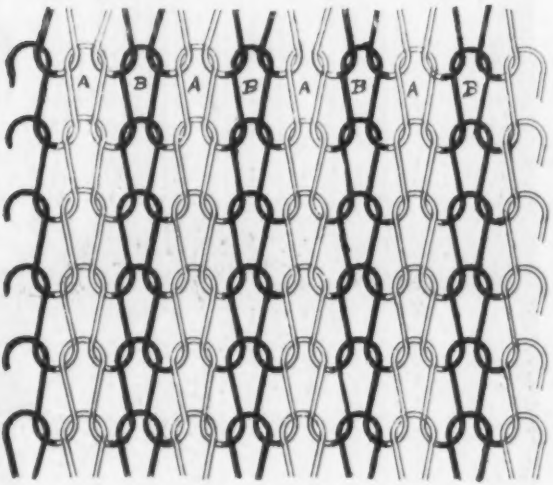


FIG. 14.

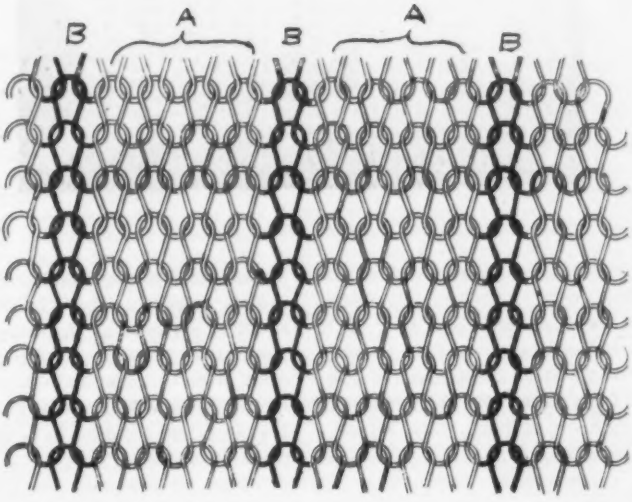


FIG. 16.

Fig. 17 is an illustration of the 4 and 1 rib stitch as shown in Fig. 16; Fig. 17 "A" shows the back of Fig. 17.

FIG. 17.

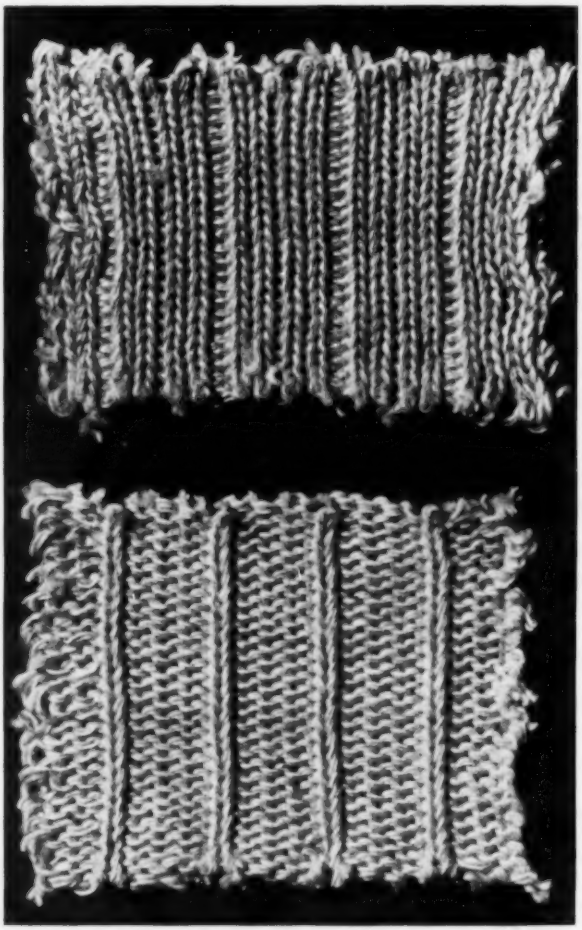


FIG. 17A.

—The foreign commerce of Japan continues to grow very rapidly, being twelve times as large last year as it was thirty years ago. This country imported goods to the amount of $36,000,000 from Japan last year. Our exports to that country were $21,000,000.

—The census shows that in the cotton industry about 45 per cent. of the wage earners are men, 42 per cent. women and 13 per cent. children under 16 years of age. In 1890 only about 11 per cent. of the wage earners were children under 16, while 49 per cent. were women and 40 per cent. men, which would seem to indicate that men and children have taken the place of women.

The Practical Results of a Century of Metric Force Bills in France.

BY PAUL LAMOITIER.

Collaborator of L'Industrie Textile, Paris, Textile Designer and Manager of the Cotton Mills of M. Michailieff and fils, Moscow, Russia.

[The following appeal to Frenchmen was called forth by the articles "Is It Worth While?" and "Textile Calculations in France," in the August issue of the Textile World, and appeared in the October issue of L'Industrie Textile, Paris. It speaks for itself, confirming the claim that a century of compulsory law has failed to eject the old standards of weights and measures from, and inject the metric standard into the French textile industry. It should be read carefully by all who believe the same task would be easy in the United States in 1903.—Ed.]

A recent number of the American journal, the Textile World, whose sympathies for the English system of weights and measures seem rather pronounced, prompts some reflections on my part regarding the unification of yarn numbering.

While high minded and disinterested men of France, Austria, Germany, Italy, etc., without malice and with the sole desire to be useful to a great number, to many peoples, seek to establish a unification of yarn numbering, the English, followed by the Americans of the United States, exhibit an opposition as unreasonable as it is selfish.

Let not the advocates of a uniform system of yarn numbering based upon the metric system, deceive themselves. It is in the United States that they will encounter the greatest opposition.

The argument of the Americans is this: "What! We are nearly 41 millions of English and 76 millions of Americans, who have the same system of weights and measures and constant relations with each other, and shall we change our system?"

O! the noble, the good, the egotistical, and above all, the naive reason! For in reality they mean to say: We are dependent on England in our commercial exchanges, and shall we change our system of weights and measures while the English are so friendly to us?

Where have you, Monsieur, the author of "Is It Worth While?" and "Textile Calculations in France," learned that it was an autocratic government that imposed a metric and decimal system on France. On the contrary, was it not established by the strongest democratic movement on record, to which, you, perhaps, owe your liberties today, and to which we are indebted for that admirable metric system, the only one that should exist on earth? And you, Americans, who are so practical, why do you bluntly refuse to adopt this metric and decimal system, accompanying your refusal with every reason prompted by routine and ignorance?

It was not established specially for Germany, Austria Hungary, the Argentine Republic, Belgium, Brazil, Bulgaria, Chili, Denmark, Ecuador, Spain, Italy, Greece, Mexico, Norway, Netherlands, Prussia, Portugal, Roumania, Servia, Sweden, Switzerland, Venezuela, etc., where it has been officially adopted. These are not countries that flout at progress. It was established because there were in use in France before the Revolution, weights and measures that varied from one province to another and even from one village to another. The nations above named have recognized the many advantages of this system and have adopted it solely because of them!

Mon Dieu! That you should remain stubborn and not adopt it, is for the above named nations and for France but a secondary consideration. The metric system wins its own way because it is the most simple, the most logical, practical, uniform and universal.

This article, however, is not written for Americans. Nevertheless they are perfectly right in speaking of our "European chaos" of yarn numbering and I will attach their argument to my remarks, not for the purpose of going backward like them, who would return to the ancient aune and the greater chaos of ancient and absurd measures.

It is absolutely unworthy of us French, who were the first to find and apply the metric system, to retain the aune and the denier for measuring silk. Ah! these Americans are not considerate of our feelings, and they are right. We are as much in the anarchy of weights and measures for the textile industry as at the time of the Revolution, for we have the denier of Montpellier and of Milan for silk, with the aune as a unit of length. We still have the diverse standards of Roubaix, Fourmies and Reims for worsted, the moque of Sedan, the livre, the quart and the sous of Elboeuf, the yard for linen, etc. Ah! the famous aune, do you know its equivalent? Ex-

actly 3 ft. 7 in. 10 lines and 10 points, or, in other words, 1.188447 meters; the foot being equal to .324839 meters, and divided into 12 inches, the inch into 12 lines and the line into 12 points.

You would not imagine this, as you are in the habit of calling it 1.19 meters.

You laugh!

It is, however, no laughing matter unless you consider it, as I do, profoundly ridiculous.

And what do we find here? The yarn count in the North of France is a length and in the Centre a weight. I will take my oath that the manufacturer of Rouen, if he has not studied each section separately, has no idea what is the standard of Reims or the denier of Lyons or Milan. And on the other hand, the manufacturers of Reims and Lyons are likewise puzzled in making comparisons of the diverse numberings of the diverse materials.

And this is the reason why they are right in mocking us when they say we do not use the metric system for numbering yarn and for weaving calculations. Nothing is more arbitrary than to reckon the yarn by the thousand meters and the width of the cloth and the picks of the filling by the inch. It is nonsense and a derision. Note also that while I speak here only of France, I could say as much of all Europe. For example, do you know that the Russian reckons the width of his cloth in verschki, the picks by the quarter inch and the yarn by either the French or the English system? One verschok equals one-sixteenth of an archin.

To say that all this leads to insignificant variations is an error. I know, for example, what serious disputes have arisen from the difference between the standards of Roubaix and Fourmies. Do you want an example?

I know a shipper of Cambrai who sent from 5,000 to 10,000 kilograms of worsted to be spun to No. 100 on cops, to Messrs. F., at Fourmies. The shipper lived in the Fourmies district, but (in a way absolutely abusive in my opinion) reckoned the yarn by skeins of 714 meters, thus gaining 4 meters per kilo as compared with the Fourmies standard. The work was paid for by the number of skeins and the shipper thus gained 400 meters per kilo. As the shipper delivered only enough material to make the number of skeins required, there arose a violent dispute that lasted several months. It is true that this interests but a part of the population, nevertheless, the unification of yarn numbering is of great importance to all.

This is what I should like to see established. It is a duty and would be a glory to our government to decree of unification of yarn numbering, the unit of length being the kilogrammeter (1,000 grams and 1,000 meters). O! no need of a long statute. Two articles:

Art. 1. Textile materials shall be numbered by the number of thousand meters in a kilogram.

Art. 2. All other systems of yarn numbering are forbidden on French territory.

The advantages? It would put a stop to the chaos which the Americans ridicule. It would give us a uniform and known system easily comprehended, simple and universal as the metric system itself, allowing quick comparisons, simplifying and facilitating calculations and general transactions, preventing fraud and dishonest accounts and enabling the governments to establish uniform standards for all textile materials.

In short (this for the Chauvinists, and, consequently, for all of us) they would not ridicule us any more. It is not pleasant to be thus continually ridiculed by foreigners, especially when they have reason for doing so.

After having established the metric system, is it not truly ridiculous that more than 110 years later we should be still using the English yard, the old or French pound, the denier of Montpellier or of Milan, the ancient aune, the many different skeins, etc.?

It is said the proposed change in numbering silk would be too violent. What change? Nothing could be easier at the beginning than to put the two numbers side by side under official sanction, thus:

10 denier — 900 thousand meters (Italian).
20 denier — 450 thousand meters (Italian).

One would know immediately that the last named thread, for example, was three times as fine as waste silk yarn of 150 centimeters. A child could calculate that a warp with 4,500 ends of 450 thousand meters yarn would weigh ten grams per meter. The same thing for linen, jute, hemp, etc.

The opponents of this method cannot cite one good reason against it. What is, in fact, the count of yarn? Is it not an arbitrary measure in all cases, and is it not better to use the most practical and the most uniform of arbitrary measures? Besides, that which has been done for wool can also be done for silk.

The French system of numbering woolen yarn has won its own way throughout all Europe, and is the system most generally used from Moscow to Barcelona. Let France inaugurate the same system for silk and for other textile materials and it will win its own way everywhere by reason of its simplicity.

For raw silk the sizes now range from 8/10 to 44/46 deniers. Taking the most common Italian counts we have their equivalents by the metric system as follows:

[Here follows a long list of sizes expressed in deniers with metric equivalents.]

Each material would have a well defined range: For raw silk, 170 to 1,000; cotton, from 10 to 250; wool, from 5 to 150, etc.

In the future, more or less remote, we shall accomplish the unification of yarn numbering. The reform advances of its own accord.

In the face of foreign carcasm it should be established at the earliest possible moment.

As for the recalcitrants (English, Americans and others) a very simple procedure will be to oblige them in all countries where the metric system is legal, to mark their yarns by the metric system.

Let us say to them: "Do you want to trade with us? Then confine yourselves to that which is the most simple and the most practical."

A large saving will be made in this way in the cost of collecting custom duties in the metric countries. There is no better way than this to make them repentant.

[The reference to Russian measures deserves more than a passing notice. The Russian duim is exactly one English inch; 28 duim = 1 archin (28 English inches); 3 archin = 1 sagen (7 English feet); 16 verschki = 1 archin (28 English inches); 1 verschok is equivalent to 1 3/4 English inches. Thus the Russian measures in common use are commensurable with the English units. Where units of weights and measures are commensurable there is always a trend toward unification; consequently, natural forces are now contributing powerfully to a world's standard based upon the English system, throughout that vast portion of the earth's surface included in the British and Russian empires and the United States.—Ed.]

—A mother's love! All others are but vanity.—Dikson.

—Flattery is counterfeit money that obtains currency by reason of our vanity.—La Rochefoucauld.

A Large Rug.

The rug on the floor of the Assembly Room in the new Chamber of Commerce in New York is an uncommon specimen of the weaver's art. The size is 59 ft. 8 in. by 37 ft. 8 in., and weighs 2,750 pounds, or over 11 pounds per square yard. The pattern is a plain green centre with a self-colored border in green, carrying out the motive in the design of the ceiling, the corner pieces showing cartouches bearing the monogram C. C.

The Carpet Trade Review states that this is the largest and heaviest single piece of carpeting ever brought to this country. It was too large to go in the hold of the steamer that brought it to this country, and it was therefore placed on the deck, packed in a zinc-lined case. Fifty men were required to carry it into the Chamber of Commerce building.

The large amount of wool needed in one shade for the ground color presented a problem most difficult to solve, but the solution was accomplished admirably, the fabric being perfectly pure in color and not shaded in the least degree. While the rug was being woven it was necessary to strengthen the looms several time, as the heavy beams nearly broke down under the great weight and tension of the fabric. The main difficulty arose when they had to take the rug from the loom to finish and shear it. In order to remove it from the weaving mill the manufacturers were obliged to break away a portion of the wall of the building, as the stairs, although adequate for rugs of large size, proved too narrow for this enormous piece of work. Under the great weight of the fabric the shearing machine was broken down several times.

Praise is but smoke, and all smoke troubles the vision.—G. M. Valtour.

A favor received is the most sacred of debts.—Mme. Necker.

Cotton in Africa.

MAX BENNETT THRASHER,
Tuskegee Institute, Tuskegee, Alabama.

Wanted.—Negro Cotton Field hands to grow Cotton in West Africa. Comfortable homes and just treatment guaranteed. Deserving applicants please write to New Cotton Fields, Limited, 42 Devonshire Chambers, Bishopsgate Street, London, England.

The above advertisement is clipped from a recent issue of the Tuskegee Student, the weekly paper published at Tuskegee Institute, Booker Washington's great school for young negro men and women at Tuskegee, Alabama.

It will be remembered that two years ago four men went from this institution to the German colony of Toga, in West Africa, to teach the natives there cotton-raising after American methods. These men—one a teacher of agriculture at Tuskegee and the other three graduates from the Tuskegee agricultural and mechanical departments, were hired by the German Colonial Society, an organization devoted to the development of the German colonies. It will also be remembered that last spring when the superintendent of this expedition, Mr. J. N. Calloway, came home for a month's visit, he wrote for The Textile World an account of the work which they had done up to that time.

Inspired by the success of the Germans, the English are now trying to introduce the same industry into their West African possessions, and have turned to our Southern states, and more particularly to Tuskegee, for trained men to take charge of the work. In addition to the firm whose advertisement is quoted, one other British company has also written to Tuskegee for advice and for men.

In addition to this the Germans have a man of long training and great ability in this country now, making investigations in regard to cotton and collecting information. This man, Mr. C. F. A. Weydig, an agent of the German Department of Agriculture, has been in America about a month, and has recently passed a week at Tuskegee, going from there into the cotton belts of Mississippi and Texas. Mr. Weydig has had twelve years' experience in various of the German colonial possessions. He comes to America from Zanzibar, and German East Africa, into which country an effort is to be made now to introduce the same work being done in West Africa.

When Mr. Calloway went back to Togo last spring he took back with him a number of additional men from Tuskegee, including one man and his wife. These were asked for by the company to be located as model farmers among the natives. Since then the company has cabled for two more men.

The first plantation established by Mr. Calloway was located sixty miles inland from the sea port of Lome. This year another has been opened up at Lome, thus giving the colonists a station of their own on the coast. The two are connected by a good road, except that on account of a lack of beasts of burden caused by the ravages of the tzetze fly, it is necessary to carry most supplies back and forth on the heads of the natives.

Do You Make Cement?

BEN SHAW.

Aren't you paying out good money for cement and glue? If you are I want to tell you how we succeeded in saving several dollars a year. We had been buying cold glue at one of the trade houses and paying $2.15 per gallon for it, but we found that by cooking three pounds of Carpenter's glue and mixing with it one gallon of acetic acid the result was a very satisfactory cement for lagging pulleys and work of that nature. As the glue would never cost over 15 cents per pound, and the acetic acid not more than 20 cents, the total cost would not exceed 65 cents per gallon, a saving of $1.50, which, it must be admitted,

paid well for the trouble of making.

An exceptionally good cement, which will hold clearer cloth to the iron rolls, is made by cooking carpenters' glue and, while cooking, by adding dry pitch in such quantity as will give a proper consistency to the mixture. A little experimenting will readily show the amount of pitch to add. Any excess will fail to unite with the glue and the mixture, when cold, will be sticky and crumbly. This cement, when properly made, may be turned out from a mould when cold, and, if stored in a dry place, will keep indefinitely. If allowed to stand in a damp spot, it will become mouldy.

It is at times found that the cloth will not adhere to the iron roll. Too often this is charged to poor glue when, in reality, the grease or oil upon the metal is responsible. Rolls are generally steamed to remove the old glue and fragments of cloth and, as the steam usually contains a considerable amount of oil, coming as it does from the boilers and cylinders, when the rolls are removed from the wash-box they receive this oil upon their surfaces.

If they become too greasy they must be treated with acetic or other acid to remove it. The same would apply to a pulley to be lagged up. If it is an old pulley it should certainly be treated in this way to insure perfect adhesion of the lagging.

A Knitting Machine.

A new knitting mechanism to be used on machines having double-end tumbler needles is shown at Figs. 1, 2 and 3, and has recently been patented in this country.

The inventor states that in machines of this kind it often happens that when a partly-flat and partly-ribbed fabric containing regular meshes was knit simultaneously with reversed meshes, the needles knitting the regular meshes were thrown out of the jack-hooks when liberated from the jacks. When the jacks returned, their hooks could not catch the needles, which then were liable to be broken and frequently were broken by cams passing over them.

The object of the present invention is to provide a mechanism whereby this disadvantage may be obviated. The essential feature of the invention consists in providing a lever pivotally arranged within the jack-channel, which lever after withdrawal of its jack operates to prevent its respective needle from being thrown out.

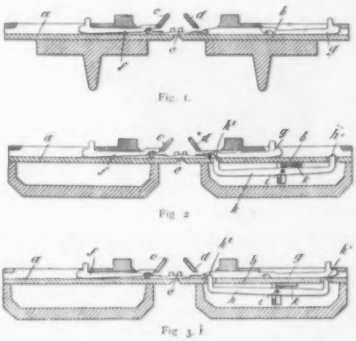


Fig. 1 is a sectional view of the needle-bed of an ordinary straight-knitting machine. Figs. 2 and 3 shows the parts in two different positions.

In such machines both needle-beds, a and b, are in the same plane, and the needle, e, is drawn alternately from one bed into the other for knitting ribbed fabrics, while it remains in the same bed when regular meshes or flat fabrics are to be knit.

When the needle passes from one bed to the other, the free extremity of the jack, f, slides against the inclined surface, c, liberating the needle, e, which then is caught by the other jack, g, and drawn into the opposite needle-bed. When knitting meshes or flat fabrics, the needle, e, is advanced and retracted by the same jack.

The lever, h, constituting the main feature of the present invention, is arranged within the needle-channel of the bed, b, and is fulcrumed on a pin, i. At both extremities it is provided

with rectangular projections or arms, h′ h², somewhat beveled or sloping at their inner end surfaces. The arms, h′ h² alternately project into the needle-channel.

In Fig. 2 the arm, h′, and in Fig. 3 the arm, h², are represented as thus projecting.

When regular meshes are to be knit in the bed, a, and the jacks, g, of the opposite bed are retracted, the projection h′ is pressed downward, the lever h, is tipped, and the upper extremity of the arm or projection, h², extends into the needle-channel, preventing any further movement of the needle, e.

When reversed meshes are to be produced, the advancing jack presses the arm, h², downward, so that the needle can pass freely from one bed into the other.

The lever, h, and the pin, i, are supported by an angle-piece, k, arranged in the needle-bed. Such levers may be provided in one or both beds.

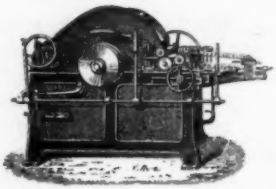


FIG. 9.

The Waste Silk Industry.

HENRI SILBERMANN.

IV.

(Continued from November.)

The crushed cocoons after being dampened are run through the so-called cocoon opener, Figs. 9 and 10, to complete the cleansing of the material and open it up for further manipulation. The material is spread out on a feed-table to the thickness of one inch. This is then carried by the feed rolls to the main cylinder, covered with card clothing, and which becomes gradually covered with the mass of silk cocoons.

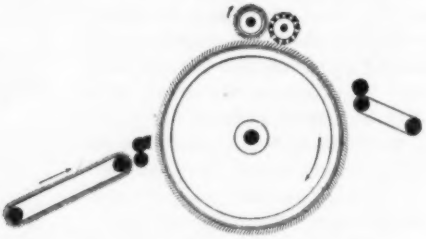


FIG. 10

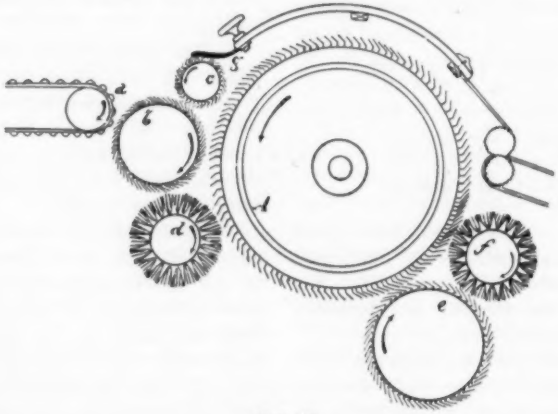


FIG. 11.

This mass comes in contact with a roller filled with needles which still further open the cocoons. The residue of the silk worms and other heavy impurities, fall to the floor under the machine; the dust is removed by a fan, and the fleece is cut

apart from time to time and removed from the machine.

The cylinder makes 50 turns a minute and revolves so that the side next the feed roll moves downward: Fig. 11 shows a cocoon opener of modern construction in which two rolls. b and c, covered with card clothing take the

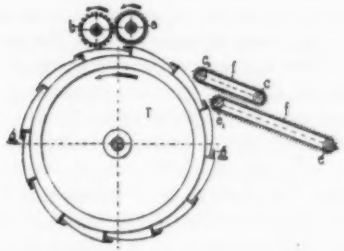


FIG. 12.

place of the feed rolls. The speed is regulated by the length of the spindle; (e) is the worker; (d) and (f) are brushes, and (g) is the leather cover.

Further manipulation of the waste silk begins with the mixing of the different grades. This is done either to reduce the cost or improve the work-

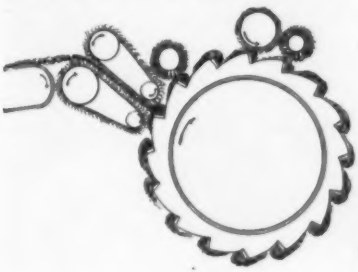


FIG. 14.

ing of the material. The mixed stock is next run through a filling machine to open up the material and prepare it for the subsequent combing.

The filling machine consists of a large cylinder, T, Fig. 12, provided with twelve or more bars in which are set one or more rows of needles. These needles are 1 or 1 1/2 inches long and about 1/10 of an inch thick. The cylinder makes 40 to 45 revolutions a minute and seizes the silk waste that is carried to it by the spiked apron, f f, Fig. 12, B C, Fig. 13. The needles in the apron hold the silk firmly so as to prevent lumps from passing to the cylinder; in this way the cylinder gradually fills up with silk in which the individual fibres are well separated from each other.

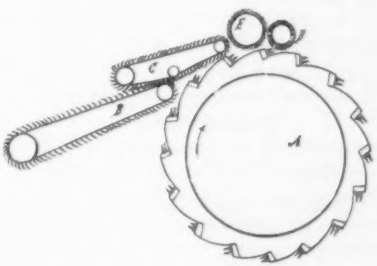


FIG. 13.

Sometimes fluted feed rolls are used instead of the spiked apron, but they do not answer the purpose so well. These fluted feed rolls are held together by levers and heavy weights. At Fig. 13 is a worker, E, which serves to comb the silk out still more; D is a brush for keeping the worker

FIG. 15.

free from dirt. When the cylinder has become sufficiently filled the silk is cut off, the staple being about seven or eight inches long.

This method of cutting the silk was formerly used for all grades, but at present is used only for the coarser silk as it is now believed that this process injures the strength of the yarn.

The removal and collection of the material for subsequent combing is

effected by means of wooden strips on which the silk hanging to the needles is wound. The silk is removed from some machines by clamps. The total production of a filling machine is 200-250 pounds.

Fig. 14 shows the filling machine in operation with the silk on the needles; Fig. 15 is an enlarged view of the needles showing the tufts of silk hanging to them.

(To be Continued.)

Water Power.

A few suggestions on an old subject.

BY ARTHUR T. SAFFORD, CONSULTING ENGINEER, LOWELL, MASS.

At the present time, water power is receiving a large amount of considerations, new powers are being developed, old ones enlarged and some, abandoned for years, are being considered a valuable addition to manufacturing sites. More and better wheels are being sold than for years and manufacturers are not waiting until the old wheels actually go to pieces before they are willing to spend money for new and improved ones.

All these conditions have come about as the natural result of several years during which the flow in the streams has kept up well from continuous rains, and there has been more or less difficulty in getting a full supply of coal at low prices. There is no controversy at the present time as to whether steam or water power is best adapted for manufacturing purposes; but one is used to supplement the other. It is not the purpose of this short paper to discuss the merits of steam and water power but simply to give a few suggestions which may assist manufacturers to obtain the best use of their water power.

The value of a water power depends upon its ability to furnish a given horse power for as many hours in the day and as many days in the year as it is found profitable to run a mill. So far as it fails to furnish this power continuously, it has its limitations, and the mill must make up the necessary power with steam or shut down. Oftentimes these limitations, which exist in the natural condition of the stream, are more imaginary than real and can be done away with by a judicious expenditure of money. They are for the most part occasioned by droughts and freshets, anchor ice and large variations in the daily flow of the stream.

FIG. 2.

Droughts usually occur in New England in January or February when the small streams freeze up; in the period covering July, August and September when the average flow for streams without any storage is but twenty-five per cent. that of the average for the year. At these times, without storage to draw from, a water power will not furnish more than 0.5 horse power to the square mile of watershed, for each ten feet of fall, even if the 24 hour flow of the stream can be concentrated into 11 hours' use.

A decided contrast to this is seen in the case of the Presumpscot River, which comes out of Sebago Lake, where this question of storage has been studied very carefully and the water is drawn down so low, during the fall and winter, that most of the water from melting snow and ice goes to fill the reservoir and not much is wasted. For the sake of showing the difference between the flow of a stream under control and one which is not, I give the figures of average yield of **Sebago Lake and the *Merrimack River at Lawrence, by months. for the period from 1890 to 1897.

Sebago Lake, Maine. cu. ft. per sec. per sq. mile of watershed.		Merrimack River at Lawrence, cu. ft. per sec. per sq. mile of watershed.
1.45	January	1.31
1.46	February	1.39
1.37	March	3.00
1.54	April	3.55
1.68	May	2.17
1.56	June	1.32
1.48	July	0.85
1.52	August	0.67
1.45	September	0.74
1.43	October	0.93
1.28	November	1.28
1.38	December	1.29
1.47	Average.	1.54

From U. S. Geological Survey, 19th Annual Report, Part IV., pp. 113-115.
From U. S. Geological Survey, 19th Annual Report, Part IV., pp. 104-107.

Note that while Sebago Lake averages 1.47 cu. ft. per sec. it never gets above 1.68 or below 1.28; while the Merrimack which averages 1.54 cu. ft. per sec. gets up to 3.55 in April and down to 0.67 in August. In other words the Merrimack does not get below 1.24 H. P. per square mile on 10 feet fall which is much better than the stream without storage; while Sebago Lake never gets below 2.37 H. P. per square mile on 10 feet fall which is 5 times that of a stream without storage. The value of a water power, which can be depended upon, depends therefore very largely upon the storage.

This same difference is shown graphically by the diagram at Fig. 1. It must be remembered that the Merrimack has over 100 square miles of storage reservoirs but approaches more nearly the condition of a stream without storage when the total watershed is considered. If we had the measurements of a stream without any storage these differences would be more marked.

I would suggest that some of the readers of this article have the watershed above their mills drawn on a good state or county map of known scale and planimetered as an indicator card is. Then if it is found that the capacity of their wheels is three or four times what this watershed ought to furnish in these three dry months it may be well to look up chances for storing water on the stream instead of wondering each year why the stream does not give as much water as it used to.

The great number of streams used for power throughout New England, where the storage is obtained from artificial reservoirs afford about 1 horse power per square mile on 10 feet fall when the use is for 11 hours in the day. In most cases the storage is possible only by a combined action of mill owners on account of the expense; but this joint action is profitable especially if the reservoir is at or near the head of the stream, so that it benefits everyone on the stream. The Blackstone river in Massachusetts and Rhode Island is a good instance of a stream where the summer flow is maintained by the use of storage reservoirs. Fig. 2. shows a dam built in 1901 to store the water of three

square miles of watershed contributing to this reservoir. This reservoir can be drawn down 12 feet during the dry season.

Freshets become much less dangerous where the water from melting snow and ice can be stored in reservoirs which have been drawn down during the fall and winter. The water shed of these reservoirs is practically eliminated as a source of danger and the river will rise only as the water from the areas contributing to the Merrimack during a cold spell following an early breaking up of the river.

The question of variation in the hourly and daily flow of the stream is often a very serious one and has not been studied carefully enough. Years ago the amount of water drawn from the streams was small, every mill had a full pond to start with each morning and the number of hours work was about the same along the stream. Now cotton or woolen mills run 11 hours on the same streams with paper mills,

FIG. 3.

main stream gets into it. This complete control is not possible on large streams like the Merrimack and Connecticut but has been found to work very successfully in the case of small streams.

Anchor ice is an occasional and sometimes a serious trouble, but is limited in its effect. It usually comes, in large streams, where the ice breaks up at an unseasonable time and cold weather follows, making the conditions in the running stream favorable for its formation; appliances for getting rid of it are expensive and unsatisfactory, and while it is in the water almost nothing can be done except to dig it out. It is always wise to reduce the quantity of water drawn so as to have water to float off the ice with. Fig. 3 shows the ice making in the

which usually run 24 hours and, to still further complicate matters, electric light plants are springing up which oftentimes do not run to their full capacity until about the end of the afternoon.

The total quantity of water which flows in the stream during 24 hours may be the same as formerly, but it comes at unseasonable times, is oftentimes delayed in the morning and comes in large quantities at night to waste over the dam. I believe that questions of this sort will have to be settled in the future by the courts or arbitration; who will decide just how far the water of a river, which has been accustomed to flow by a mill site, can be held back or sent down at unseasonable times.

I would make this suggestion as

bearing directly upon the variation in the flow; that heights be taken in the mill pond every hour or oftener during the dry weather and plotted, to show just when the water from above gets down to the mill and what its hourly variation is; if there is any delay this can be obviated sometimes by starting a few minutes late or, better, by putting flash boards on the dam to hold an hour's supply. The practical result of knowing about this and providing for it beforehand is that the head can be kept from drawing down, and the power of each cubic foot running in the stream increased. When it is found that, during the night

FIG. 4.

the rise is a definite number of feet this can be made use of by drawing the pond down during the afternoon and using more water with less head. I think a plotting of the hourly run of water during dry seasons would be something of a revelation to owners of water power and oftentimes lead to an improvement of the conditions under which the water is used. There is always some one about a mill who can take these records and they can be kept plotted for daily reference.

Leakage is a very important item, particularly to a cotton or woolen mill, which is shut down for more than half of the twenty-four hours. These leaks are through the wheel gates when shut down, through the ground in the neighborhood of abandoned flumes or raceways or through the dam or flash boards.

I know of one instance, where I was called in as an expert, to decide what were the several rights to draw water from the stream in addition to an old grist mill right, which was not questioned, where the leakage was the chief cause of the trouble. After years of litigation the courts decided that the stream should yield a certain number of cubic feet per second and the total use, including the grist mill should be covered by this. A practical test showed that the grist mill and the leakage required fifty per cent. more water than the court had decided the yield of the stream to be.

In another case, where a measurement of the water was necessary, the leakage was so great that a piling was built around two sides of the mill to hold the water and it was measured over cuts in this piling which made good measuring weirs. What went through the wheels was less than the leakage. These are not unusual cases, and, when it is considered that wheel gate leaks are running for perhaps 13 hours in the day and others 24 hours in the day and seven days in the week, it is not to be wondered at if the amount used through the wheels is not sufficient. Look out for the leaks and see that they are stopped, have the dam and flash boards tight even if it means having a man go over them each day during dry weather with hay and ashes. Fig. 4 shows a tight dam to serve as a model.

Without going into the question, at the present time, of the best modern wheel design, there are certain precautions which can be taken to advantage. One is to have the wheels hitched up in such a way that one or more can be thrown off when the water is low instead of shutting the gates down. Most turbines give from seventy-five to eighty per cent. of the power of

the water at full gate. At one-half gate, which usually produces about two-thirds of the full discharge, this efficiency is 10 per cent. less; at three-eighths gate, discharging one-half that is at full gate, this efficiency is twenty-five per cent. less; that is, it takes nearly half again as much water to get results at less than half gate as it does at full gate.

Of the type of wheel there is a good deal to be said which this short paper cannot even touch upon. So much depends upon the conditions which the wheels must meet that it is difficult to even suggest a type. In a general way, for the ordinary conditions, we want a fast running wheel of large capacity for its diameter, one with a tight gate and easily controlled by a

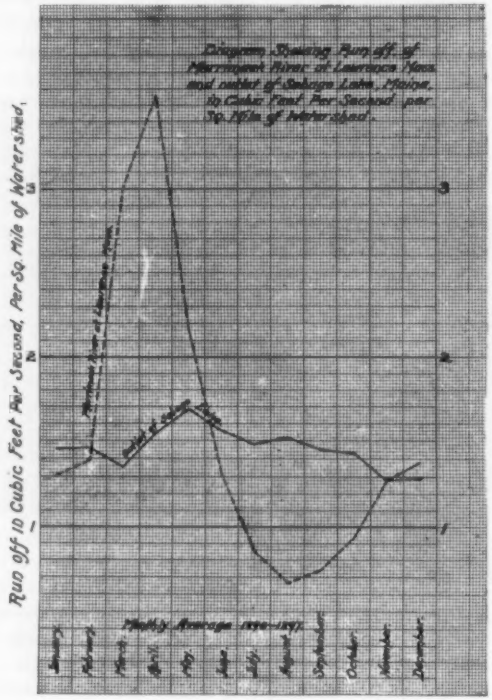


FIG. 1.

This is perhaps very rudimentary but there are a great many cases, which I have run across, where several wheels are run to poor advantage instead of half that number to good advantage when the purchase of a clutch coupling or some slight rearrangement in the shafting would avoid this loss of power. In putting in new plants the wheels are often more economical to be in small units than large; and where one wheel or pair does the regulating, by special design the efficiency can be made as high as seventy-five per cent. down to the small gates.

regulator, which does not get badly out of repair and can be reached easily for minor repairs. All these conditions are met well by horizontal wheels placed between the two water levels, with penstocks, wheel cases, draught tubes, etc., large enough and with easy curves, to bring the water from the canal or river to the wheels without serious loss of head. Every effort should be made to get as nearly the full fall at the mill site as possible; oftentimes, while channels above the wheels are ample, those below are filled with rocks and obstructions.

This paper simply touches upon a number of conditions, which exist in almost all water powers and the importance of them is best seen in the results sometimes obtained in improving water powers. The simple keeping of records of rainfall, flow of the stream and heights of the water give one a fund of information, useful in managing the power and improving it and the numberless legal questions, which come up from time to time, which cannot be appreciated by those who never have had them to work with.

I would suggest that every manufacturer who reads this paper ask himself whether he is not demanding too much of the stream on which he is situated; whether he can not alone, or with others on the stream, increase the storage in order to keep up the flow in dry times; whether the mills above him are not interfering with the customary use of the stream; whether he may not change to a slight degree his running or make his mill pond larger and draw it down by using more water, counting on its filling up again during the night; whether he may not be losing every day an important part of his power through leakage; whether he may not to advantage take out some of his wheels in dry weather, and use those running to best advantage, or even take out the old ones entirely and get better results with new wheels from much less water.

What is needed to make water power valuable is to have as intelligent designing and supervision as is given to the steam plants and this is possible only by a careful study of the conditions under which the water power is used.

Removal of Grease Stains from Worsted Hosiery.

BY PALMETTO.

The mode of treatment for the removal of grease stains from worsted material differs very essentially from the methods used on cotton goods. In carrying out this operation on cotton or other vegetable fibres, use is made of strong alkalies, soap, etc., at boiling temperature for the purpose of saponifying the fats of grease, machine oil, etc.

To a certain extent this same principle of saponifying the grease is resorted to in worsted goods, but at a much lower temperature and less concentrated alkalies, as the treatment of wool or worsted material in alkaline solutions of even a low degree of concentration, but at elevated temperature, would have a disastrous effect on these fibres. It is, therefore, obvious that only such agencies may be employed, and under such conditions as will ensure the fibre retaining its normal properties.

The usual plan followed in removing grease, other than the oil used on the fibre to facilitate the spinning, from worsted hosiery intended for bleached goods, consists in scouring the goods thoroughly in a bath made up with soap, sufficiently strong to retain its lathering properties throughout the operation of scouring, with the addition of 1 1/2 to 2 per cent. of soda carbonate at a temperature of 90 to 110 degrees F., the latter point should never be exceeded. The goods are then rinsed in lukewarm water until all trace of soap is removed.

If the batch still shows grease stained hose in sufficient numbers to justify the extra cost, the goods are then sorted over and the soiled garments scoured again in a weak and cold soap bath; no soda is used this time, but a generous quantity of some volatile solvent, bisulphide of carbon or benzine, preferably the latter, is added, and the goods agitated and let soak in this liquor a considerable time.

A considerable saving may be affected in this operation by squeezing the goods when removing them from this bath, retaining the liquor thus saved for subsequent lots, which

would then only need the addition of a small portion of the ingredients to bring the bath up to the strength again. This operation ought always be carried on in a cool place. This caution applies particularly to the storing of the surplus quantity in stock, as also the scouring bath itself, which should be provided with a cover when not in use.

The scouring operation completed, the goods are then rinsed again in lukewarm water until all trace of soap has disappeared.

Picking and Carding.

VII.

BY SAM DRIVER.

(Continued from October.)

(Copyright, 1902, Guild & Lord)

Kangaroo hair is of a loose, open and brittle nature, having come in contact with lime. It is also dusty. It is easy to card out clear. The workers, cylinder and doffers should be moderately sharp. The doffer should be set as close as possible to the cylinder and not strike. Do not overload the first breaker; set the workers and strippers by 28 gauge; run the doffer 16 turns a minute, if 24 inches in diameter.

Take the fancy off the cylinder on both sides, then set up both sides of fancy to the cylinder, so you can feel gauge go through on both sides alike. Then set both sides in so that the gauge will pull through quite tight. This is the safest way to set a fancy both sides alike on the cylinder. One of the greatest secrets in the art of carding wool is in setting the fancy properly, the speed considered.

There may be trouble in keeping the drawing upon the first breaker, and you may have to run a tin roll under the comb or some other device of which there are many.

The best device I have seen and used for low batches, where they have trouble in keeping up the drawing on the first breaker, is to bring the frames of first and second breaker within six or eight inches of each other. This gives more room in the card room. This leaves space enough between the frames of the first and second breakers for the men to strip the cards.

Then place a short apron, like the apron on a Blamire feed, only shorter, between the first and second breakers. Set the apron under the first breaker comb and one inch from the doffer and half inch from the feed rolls on the second breaker. Have a gear on the apron roll and a gear on the bottom feed roll and drive the apron by the intermediate gear, just as the old fashioned hand feeds are driven.

Have bearings attached to the inside of frame on the second breaker for apron; roll and bearings are attached to the inside of frame on the first breaker. Have them made so the strippers can let the apron down easy when they strip the first breaker. The side drawing can be taken off. The feed shaft and gears can be taken off on the second breaker. Take off the large gear on the bottom feed roll shaft and use a 6-inch pulley instead; drive feed rolls and apron by the belt from the main cylinder on the second breaker, any speed desired. I like to have them run fast enough to take the web from the doffer as fast as delivered on the apron.

I have adopted this plan in several mills using low stock with the very best results, the owners being more than pleased with the work.

Why?

Because the work is better, less waste is made, lower and cheaper stock can be used, there are no drawings to keep breaking down on the first breaker, and no drawings running out on the second breaker. It is very easy on the help; it is just the same as hitching the first and second breaker together, only a great deal better.

The fibres run in the second breaker straight just as delivered from the

first breaker on the apron. It is very easy on the card clothing on the second breaker; there are no drawings to pull in. The Bramwell feed must do its work as well as it can be made to do it.

The carders in the mills where I adopted this plan say they never want to run low stock again in any other way. Set the second breaker and finisher same as the first breaker, only we want this yarn for backing to look woolly. To do this, set the workers from strippers quite a distance off. On finisher condense well and give long draft of roving.

(To be continued.)

Automatic Take-Up for Builders of Self-Actors.

With the rigid and heavy carriage of a self acting mule, much power is required when the carriage starts out in order to drive the spindles and give the necessary twist to the yarn. As the spindles are driven by flexible bands, there is more or less lost motion of the spindles and consequently the twist is not imparted to the yarn in proportion to the amount delivered by the rolls which are driven by positive gears.

A certain length of roving will be delivered by the rolls before the carriage starts, causing snarls or "spindle points," unless the delivery of the rolls is retarded. Upon the return, when the carriage reaches the end of its travel, the connecting lever, v, Fig. 1, strikes at its extremity, or the furthest point of the eccentrically formed end of the lever, q, against the upright plate, k, pushing the slide, l i, with the finger, s, against the small belt or band, f, bringing the balance weight, p, up to the bracket, g, thus causing a friction between the eccentric incline at the end of the lever, q, and the upright plate, k, retarding what would otherwise be the sudden lift of the faller wire; being thus retarded, it causes several coils of yarn to be run on the spindle, just on the point of the cop nose and a little above it; this yarn would otherwise run into snarls or small kinks on the bare spindle.

Very often when a mule strikes in at the beam, this loose yarn will rise up the bare spindle; sometimes it will draw off as the carriage travels out, but by storing away this yarn in coils on the spindle, soft cop noses are prevented, which is also difficult to prevent at times on account of all the possible slack yarn not being stored away in coils on the bare spindle. But as the cop builds up, these coils are

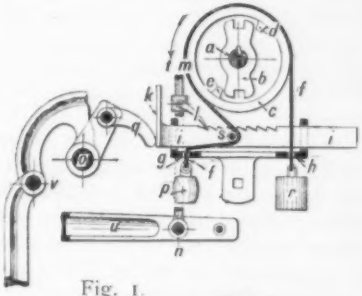


Fig. 1.

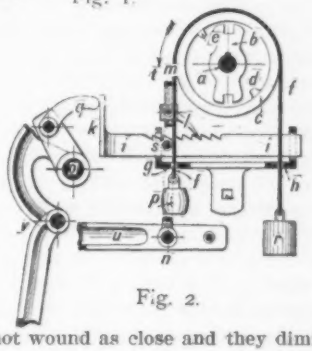


Fig. 2.

not wound as close and they diminish with each layer of yarn wound on the cop.

This decrease is brought about by advancing the bar towards the large balance weight by means of the channel between the two plates on the floor, according as this bar descends at each layer wound on the cop, the coils on the bare spindle diminishes.

We thus have two lengths of yarn, one being that left by the counter faller, which in the machine having the bar and plates made exact, is

nearly constant for each layer on the cop; the other length is that before the locking of the fallers and this length diminishes at each layer wound on the cop.

The sum of these two lengths will vary. By adding the length of yarn delivered before the carriage starts out, we can thus determine how much the rolls should be held back. In some modern machines this motion varies for different sizes of yarn, but it is not automatic and the spinner must adjust it by hand.

Fixed on a shaft of the rolls (the front roll spindle) is a cross disk, and on the same shaft a loose sleeve having two fingers over which a small belt or band slides, having at its extremities two different sized weights. When the carriage starts out, the lever raises the heavier of these weights, till it strikes against a casting; during the last part of the motion outward the small belt slides on the sleeve. After the rolls have come to a stop the heavier weight falls down and carries the loose sleeve along with it, in a direction the reverse of its first motion, till the smaller weight strikes against a guide sliding in a slot adjusted by the spinner by means of a thumb screw.

The position of that guide determines the position of the two fingers on the loose sleeve, that is, the extent to which the rollers are to be held back. To determine automatically the position of the two fingers, the two points at which the weights stop are fixed so that when the rolls are stopped the fingers in the loose sleeve are always brought to the same position by the heavier weight. Therefore, there is always the same distance between the fingers in the loose sleeve and the cross disk fixed on the shaft of the rolls in which the fingers engage.

At the return the small belt carrying the two weights is folded somewhat and causes the heavier weight to rise, thus causing the fingers in the loose sleeve (which engage in the slots in the cross disk when the clutch box is engaged) to advance a certain distance, which is always greater than the travel of the cross disk itself. This distance, which would increase during the building of the cop is determined by advice working direct with copping plates which determine the form of the cop.

An apparatus is now in use which receives direct from the plates the motion necessary to fold a small belt. It is the invention of M. Hirle and is built by the Societe Alsacienne.

Another part, also in direct connection with the copping plates and working much better by reason of its position on the machine is certainly the faller wire, and by taking advantage of this faller wire, the Societe Alsacienne has constructed the following device: The small belt, ff, Figs. 1 and 2, passes over the finger, s, fixed to the ratchet, i, sliding in a casting, g h, carrying at its other extremity the square arm, k, and held in position by the catch, l, fixed to the rod, m n, which is in turn fixed to the balance, w.

At the end of its passage outward the balance makes its first oscillation, drops toward the small balance weight and rises towards the large one; the rod, m n, rises likewise and the ratchet, i, is released from the catch, l. The weight, r, then pushes the finger, s, toward the small balance weight until the small belt, f, is in a vertical position; the weight, p, then strikes against the solid plate, g.

The carriage starts inward, the lever, o, which is fixed on a shaft of the fallers, is an eccentric of previously determined shape, q, so that during the formation of the cop it approaches continually nearer to a vertical position.

At the end of the passage inward the finger, q, strikes against the square plate, k, pushes it in a certain distance, forces the small belt to follow in a broken line and so determines

the position of the fingers, e and d, on the loose sleeve (one end of which forms part of the usual clutch box, while at the other is the groove for the fork that works it in and out of gear) in relation to the cross disk, b, which is guided by them.

By reason of the rise of the faller wire as the cop is built up, the force with which the end of the finger, q, strikes against the plate, k, grows stronger, thus diminishing the movement of the stud, S, which gives an automatically diminishing motion produced without a complicated mechanism. Fig. 2 shows the position of the different parts when the cop is finished, that is to say, when the faller wire is at the right point. To change for different numbers, either the stud, S, or the finger, q, is changed.

These attachments have been fitted to a number of self acting mules and are giving satisfaction to all who have adopted them.—Faivre of Mulhouse in L'Industrie Textile.

Finishing Wool and Mixed Fabrics.

XIX.

BY N. REISER.

Translated from the German for the Textile World.

(Continued from November).

(Copyrighted, 1901, by Guild & Lord.)

PRESSING.

This consists in subjecting the goods to pressure between hard surfaces, which gives smoothness and lustre to the face. Following are some of the factors which influence the lustre obtained by pressing: 1. Lustre and quality of the raw material; 2. Thickness of the nap; 3. Straightening of the nap by which the fibres are brought parallel with each other; 4. Moisture; 5. Heat; 6. Duration and degree of pressure.

There are three methods of pressing: 1. The so called Stich press; 2. Plate press; 3. Rotary or cylinder press.

THE STICH PRESS.

This method may be used either without or with press papers. The first method is often used for black goods. It consists in folding the pieces and letting them stand without being subjected to pressure. When press papers are used, the goods are folded and papered in the regular way, and then a weight is placed in top of the pieces. By this method the goods acquire a slight lustre and the wrinkles are smoothed out. [This method of pressing is used in Germany, but not to our knowledge in this country.—Editor.]

THE PLATE PRESS.

With this machine press papers are inserted between each fold of the goods. Lustre cannot be imparted to cloth unless the face of the goods comes in contact with a hard, smooth surface; without such a surface, and with one fold of the cloth coming against the other, the fibres are pressed together, forming an elastic bed for each other, which prevents either surface acquiring any lustre being under no matter what pressure. It is for this reason that the hard, smooth press papers are used. Between each piece an iron plate is inserted. These plates are usually heated to increase the lustre. They also serve to equalize the pressure. The plate press is operated either by a lever and a screw or by a hydraulic press.

THE LEVER PLATE PRESS.

This is an antiquated process now out of use by which the pressure was applied to the goods by means of long levers weighted at one end.

SCREW PLATE PRESS.

This is still in use, particularly in old mills. The pressure is applied by screws, which are operated by endless gears connected with pulley and belt.

These presses are by no means of recent origin, as similar appliances have been found in the ruins of Pompeii. Fig. 187 gives a view of a screw press in which (a) is the base or bed on which the goods are laid; (f) is the cap which is bound to the bed by iron columns; (b) is the movable head piece by which the pressure is brought on the goods; (d) and (c) are

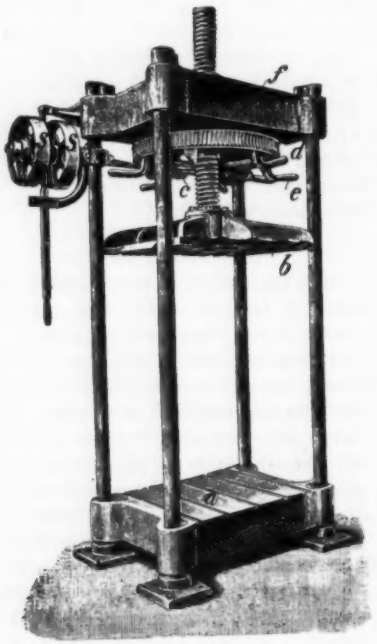


FIG. 73.

a pair of endless gears connected with the pulleys ss; (e) is the handle of the lever by which the endless gears are connected and disconnected.

The goods must be pressed twice, the second time with the press boards moved in a short distance so as to cover the fold that was made when the goods were pressed the first time. Usually the goods are left longer in the press the first time than the second.

(To be continued.)

—When my friend has but one eye, I look at him from the side.—Joubert.

Experiences in a Cotton Mill.

BY ARTHUR DYSON.

II.

(Continued from September.)

There was one fixer who seemed to delight in my inexperience, but I got a laugh on him afterwards. One day he went down into the dynamo room and by going too close to the motors his watch became filled with magnetism and failed to keep correct time. He determined to consult the electrician as to the best method of having the magnetism drawn from the watch, and one day he accosted him:

"Say, Tom, what would you suggest to take out the magnetism from my watch."

Tom was a bit of a wag, and determined to have some fun, so he replied:

"I'll tell you a sure cure for that. There is nothing that will draw the magnetism except burying the watch in the ground and leaving it there for twenty-four hours."

The fixer accordingly did so, and that night Tom and a few others dug up the watch and put a large alarm clock in its place, set to go off when the twenty-four hours were up. Imagine the surprise that the fixer got when he dug up the clock next day. The story got around the mill, and he had no opportunity to forget the watch episode.

After I had been fixing for several months, there was a loom that repeatedly needed fixing on account of the shuttle flying out. This loom bothered me for a day or so, and it seemed almost impossible to prevent the shuttle from flying out. Of course, there are many things which may cause this trouble, such as the lay sword getting loose, the shuttle rebounding in the box, the picking cam being loose or worn, the picker not striking the shuttle true or the "niggerfoot" being set too far forward or backward.

None of these things seemed to be the cause, and I was unable to locate the trouble. Finally, I found that a small screw had protruded into the path of the picking stick, and every once in a while the picking stick would be deflected from its true line, and thus throw out the shuttle.

foot of the stick. Although in a somewhat worried state myself, I was obliged to laugh at the picture he made, and could imagine what he would have liked to do to the fixer who was unable to remedy the defect.

Very often a man has to exercise the faculty of quick thinking, and

HE BEGAN KICKING THE BOTTOM OF THE PICKER STICK.

The laughable part of the affair was the fact that the weaver was a man who was very short tempered, and after the loom had troubled for a short time, he lost his temper and going up to the loom he took hold of the top of the picking stick and standing on the end of the loom began kicking the bottom of the picking stick, oblivious of the fact that he was hurting his own foot worse than the

sometimes very ludicrous orders are given by those called upon to use this faculty. In a mill where I once worked, the mill was flooded by water, and owing to the foundations being solidly and securely built, the water did not recede as fast as could be wished. Seeing that several large belts were being damaged by the water, the problem of getting rid of it was a serious one.

Instead of having a hole made in the masonry and thus giving an outlet to the water, those in authority placed a man at the top of some steps which led into the basement, and gave him a pail with which to try to bail out the water. Imagine a large reservoir with a man standing on the sloping bank trying to empty it by dipping in a pail and then throwing its contents on the top of the bank and you will have an idea of what occurred.

Almost half of the water dipped up ran back into the mill, and the removal of the other half did not even lower the water a 1,000,000th part of an inch.

"Hello! Tom," said one of those who had congregated to laugh at the spectacle. "What are tha doin?"

"I'm empt'in the water front basement," said Tom. "Boss said I mun do my best to keep it down. Dos't tha think it is a bit lower?" he added anxiously, for Tom was not used to such muscle developing labor and was longing to see the end of his task.

"Naw, tha canna empty that basement in ten years, tha had better chuck it up."

"Nay, I wor told to keep lading, and I'm going to do so," said Tom, "but I wish th' boss would come and try to keep it down."

The boss eventually saw the folly of the man's work, and took him elsewhere. He got several of the second-hands, etc., to put on rubber boots and go into the basement to collect the boxes of filling, bobbins, etc., which were floating around in the water. Unfortunately for one or two of those who were placed at this task, there were several wells in the basement, and the covers had been washed from the top. In moving around in the water, the second-hand of weaving accidentally stepped into one of these holes and got a plunge bath in water which was down to freezing point. When he got out and presented himself to the men in the engine house, he was a sight, and to make matters worse, he started out to walk home, a distance of half-a-mile. By the time he arrived there, they had to dose him with whiskey, etc., while his clothes were frozen so stiff that they were more like leather than cloth.

(To be continued.)

A Double Knitted Fabric.

A method of knitting two webs which are stitched together at intervals is shown at Figs. 1, 2, 3 and 4, and is the subject of a recent patent. The inventor states that the two webs lie closely together, so as to provide, in effect, a double web joined at the desired points, the fabric thus constructed having many desirable features. The tying loops or stitches may be drawn from either web into the other, or some may be drawn from the face web into the back web and others from the back web into the face web, and the tying loops or stitches may be either single or in groups, as desired.

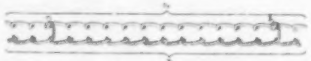


Fig. 1.

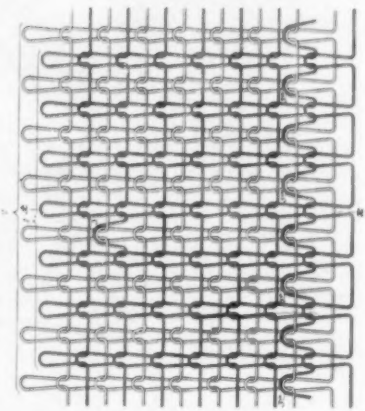


Fig. 2

A sectional view of a fabric, the section being taken on the line x x, Fig. 2, but with more and shorter stitches. Fig. 2 is a view of the fabric showing

the method of uniting the two webs of which it is composed.

The fabric consists of two single webs, each preferably tubular and one overlying the other, as shown at 1 and 2 in Fig. 1, these webs being united at any desired points by causing the yarn which constitutes one of the webs to engage with the other web, such engagement being either in the form of a loop or stitch.

By preference the tying-yarn is simply looped into the web with which it engages instead of being drawn into a stitch in said web, so that it will not have any material modifying effect upon the appearance of the latter, one of such tying-loops being represented at 3 in Fig. 2 and a series of such loops being represented at 3

Fig. 3.

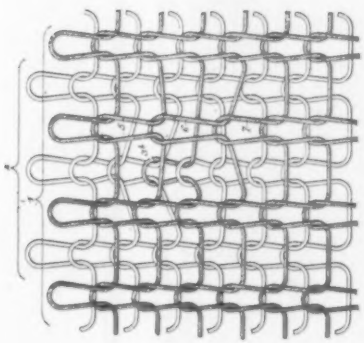


Fig. 4.

The fabric can be readily produced upon a machine having two needle-carriers, with one or more yarn-guides for each set of needles.

In producing the two single webs the yarn-guide which operates in connection with the needles of one needle-carrier, feeds its yarn to said needles only, and the yarn-guide which operates in connection with the needles of the other needle-carrier feeds its yarn to those needles only.

At the points where the webs are to be connected there is a projection of a needle or needles of one needle-carrier to receive yarn from the yarn-guide which normally operates in conjunction with the needles of the other needle-carrier, each tying-needle being projected far enough to receive the tying-yarn, but not far enough to clear the stitch upon it when a tying-loop, such as that shown at 3 or 3a in Fig. 2, is to be formed and being projected far enough to receive the tying-yarn and also to clear the stitch upon it when a tying-stitch, such as shown at 3b in Figs. 3 and 4 or at 3c. Hence when the tying-needle is retracted at the next feed both the old stitch and the tying-loop will be cast over the new stitch in the first case, or in the latter case the tying-stitch will be cast over the new stitch.

When, as in fine gauge machines, the needles are directly opposite each other in the two needle-carriers, the needle of one needle-carrier will not be projected at the point of projection of the tying-needle of the other needle-carrier, the said tying-needle receiving the yarn which would otherwise be fed to the suppressed needle, the latter thus missing the said yarn, but retaining the stitch already upon it. Hence when said stitch is cast off it will impart such tension to the stitches in the adjoining courses that the three will be slightly elongated.

When the needles of the two needle-carriers alternate with each other, however, this suppression of one needle-carrier when the tying-needle of the other needle-carrier is receiving the tying-yarn will not be necessary, and all of the wales of the fabric 1 can be alike, as shown in Fig. 2.

In all of the fabrics shown in the drawings the courses of stitches of one web are supposed to be directly behind corresponding courses of stitches in the other web, and in the fabric shown in Fig. 4 the wales of the web 2 are supposed to be directly behind the wales of the web 1, the offsetting of the courses and wales being resorted

to in the drawings for the purpose of clearly representing the formation of the stitches in the two webs.

A Cloth Brushing Machine.

This machine, illustrated at Figs. 1, 2 and 3, has recently been patented in this country, and is designed to give cloth a much more thorough brushing than is obtained by the ordinary brushing-machines, and to remove many imperfections caused in the yarn which the other machines will not affect.

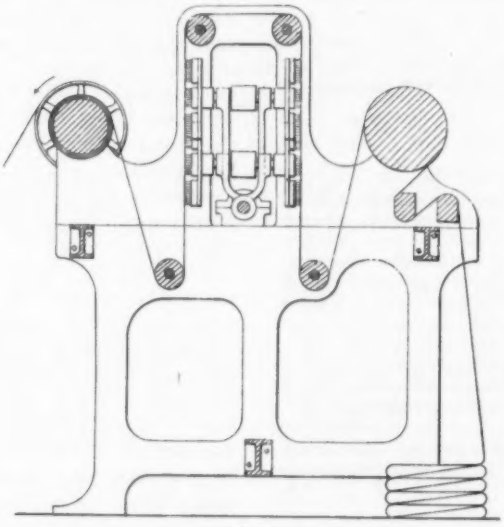


Fig. 1.

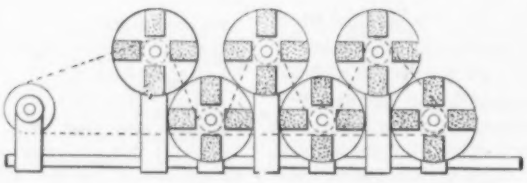


Fig. 2.

Fig. 1 is a sectional side elevation; Fig. 2, an elevation of the disk wheels carrying the brushes.

In using the machine, the cloth is passed up over the brushes in one set of disks and down over those upon the other ends of the same shafts. The speed of the brushes may be readily varied by means of a cone-pulley, Fig. 3. These brushes give the surface of the cloth a thorough brushing in all directions as it passes over them, and, it is claimed, do much more effective work than the brushes ordinarily used, which always operate to brush the nap in the direction of its length only.

In practice it is preferable to make at least some of the rolls slightly adjustable, so as to cause the cloth to run across the brushes with greater or less pressure to suit different styles of cloth. Thus these rolls may be mounted in sliding bearings made adjustable by means of the screw, as shown in Fig. 4.

—The United States is second in the world in the extent of its cotton industry, third in rank in woolens and second in silk.

The Saco & Pettee Spinning Frames.

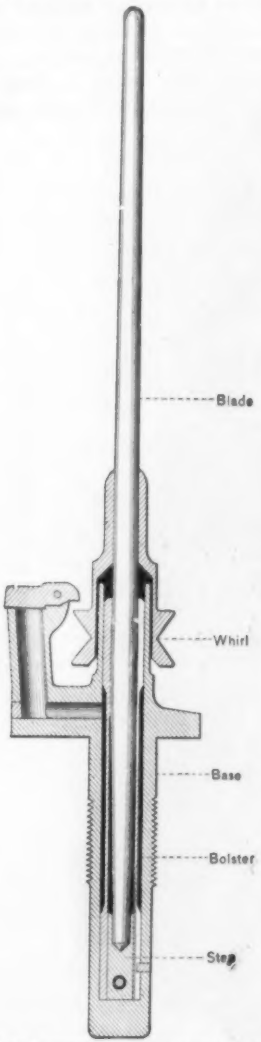
The machinery built by the Saco and Pettee Machine Shops is designed to give the best possible results at the lowest cost of production, and that these objects are obtained is proved by the many mills in which Saco and Pettee machinery is now being installed after thorough tests had been made.

Especial attention is given to making the machines as simple as possible without sacrificing any advantage.

SACO & PETTEE SPINNING FRAME.

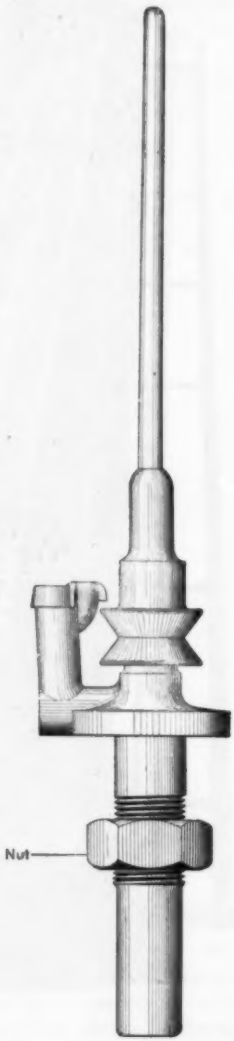
The spinning frames are built 32, 36 and 38 inches wide. The 32-inch frame is usually equipped with double cylinders, giving a longer band and a

frame requiring a small floor space. Other frames have single cylinders; these are made of two thicknesses of heavy plate tin, inner and outer heads being of iron, and all cylinders are balanced at a high rate of speed, resulting in having a most rigid and perfectly balanced cylinder.



The frames are driven from either head or foot end, preferably from the head, or geared end; in this way all torsion is avoided, and the result is steadier running rolls and frames.

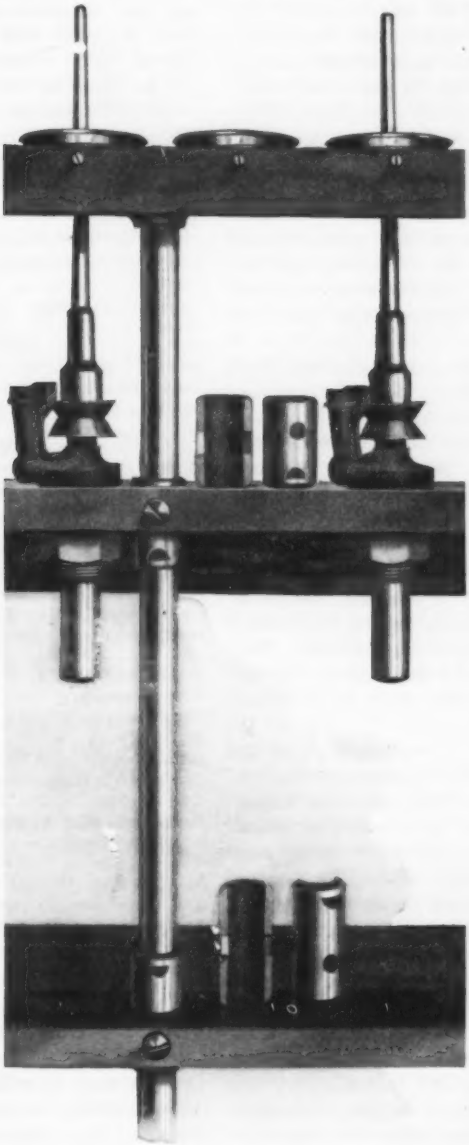
All frames, both roving and spinning, have the Saco and Pettee patent variable traverse motion, which operates without any dwell in its traverse, thereby causing the least possible wear to top rolls, a steel traverse rod drilled to template being used in connection with this arrangement.



As will be seen by the cut of spinning frame, an abundance of samsons are used, connecting the rails and beams, which gives a most rigid frame. These samsons are made with

milled surfaces, to receive the beams and rails, insuring perfect alignment, and also arranged so that the rails can be raised or lowered on the milled surfaces, so as to accommodate any desired traverse on bobbin, other parts being correspondingly adjustable.

Builders are furnished for either warp or filling, and are readily interchangeable, all frames having both warp and filling hearts.



Combination roll stands for warp or filling are furnished, also special stands to suit any variety of work.

Fluted rolls are made from the best

crucible steel, all of which is carefully tested before being used, these rolls having extra large and long shanks for coupling; all bearings are case hardened, and all work is finished to limit gauges, insuring the utmost accuracy, and the ends of rolls are designed so as not to carry oil to the flutes.

Frames are built with shipper running the entire length, if required, within reach of the smallest help, or are furnished with a self locking shipper at belted end, which insures movement of the belt in the right direction when once started, and are arranged for belting from above or below.

Attention is called to the cut showing their patented split bushing, which removes the necessity of any cleaners for use on lifting rods; this bushing can be removed without stopping the frame. All parts are machine finished and exact duplicates.

The McMullan spindle, shown in cut, is being more largely furnished by the Saco and Pettee than any other pattern of spindle, though they manufacture all types, as required. The simplicity and results given by the McMullan spindle alone accounts for its demand.

Catalogues with all details can be readily obtained upon application to the Saco and Pettee Machine Shops, Newton Upper Falls, Mass., or Biddeford, Maine; Pickers, Cards and Drawing Frames being built at the works at Newton Upper Falls, Mass., and Roving Frames, Spinning Frames, Spoolers, etc., at the works at Biddeford, Maine; and all users of the Saco and Pettee machinery are furnished with complete catalogues for all parts, so that repairs are ordered by number, avoiding delay and confusion.

This company have recently equipped several mills that are to be devoted to the manufacture of the finest goods, whose orders were placed after most careful investigation. Among these equipments may be mentioned the spinning frames at the Soule Mills at New Bedford, Mass., which have been in operation for some time, spinning about 70's. The whole of card room machinery was also furnished by the Saco and Pettee Co. The jack frames are making .22 hank roving; finer numbers will be made as the market requires. Other fine mills being equipped with this machinery in the same neighborhood are the Butler Mills of New Bedford, and the Davis Mills of Fall River, Mass. Following is an additional list of mills using this machinery both for carding and spinning:

Arkwright Mills, Fall River, Mass.; Amoskeag Mfg. Co., Manchester, N. H.; Bates Mfg Co., Lewiston, Me.; Belton Mills, Belton, S. C.; Cocheco Mfg. Co., Dover, N. H.; Columbus Mfg. Co., Columbus, Ga.; Continental Mills, Lewiston, Me.; Darlington Mfg. Co., Darlington, S. C.; Dwight Mfg. Co., Chicopee, Mass., Alabama City, Ala.; Everett Mills, Lawrence, Mass.; Edwards Mfg. Co., Augusta, Ga.; Eagle & Phenix Mills, Columbus, Ga.; Easley Cotton Mills, Easley, S. C.; Exposition Cotton Mills, Atlanta, Ga.; Grosvenor-Dale Co., No. Grosvenor-Dale, Conn.; Hill Mfg. Co., Lewiston, Me.; Indian Orchard Co., Indian Orchard, Mass.; John P. King Mfg. Co., Augusta, Ga.; Lockwood Co., Waterville, Me.; Lynchburg Cotton Mill Co., Lynchburg, Va.; Manchester Mill, Manchester, N. H.; Monarch Cotton Mills, Union, S. C.; Newberry Cotton Mills, Newberry, S. C.; Naumkeag Steam Cotton Co., Salem, Mass.; Nashua Mfg. Co., Nashua, N. H.; Pepperell Mfg. Co., Biddeford, Me.; Pacolet Mfg. Co., Pacolet, S. C.; Pacific Mills, Lawrence, Mass.; Ponemah Mills, Taftville, Conn.; Palmer Mills, Three Rivers, Mass.; Quinebaug Co., Danielson, Conn.; Spartan Mills, Spartanburg, S. C.; Saxon Mills, Spartanburg, S. C.; Soule Mills, New Bedford, Mass.; Unity Cotton Mills, LaGrange, Ga.; Vancluse Mill, Graniteville, S. C.; Whitney Mfg. Co., Whitney, S. C.; York Mfg. Co., Saco, Maine.

—The value of silk products of the United States is surpassed only by France. The product of France in 1900 was $122,000,000, or 30 per cent. of the value of the world's product. That of the United States was $92,000,000, or 23 per cent. of the world's product.

Weights and Measures in the American Silk Industry.

BY JAMES CHITTICK,
Clifton Silk Mills, Weehawken, N. J.

We quite agree with the views expressed in the excellent article in the October issue of the Textile World on the metric system on cloth analysis. I am thoroughly opposed to any change to the metric system. Some writers on this subject come out strongly on the point of the necessity for using the metric system in doing business with other nations, but we cannot see why we should change our system on that account any more than we should change our language.

As to language, the general view taken by persons of the English speaking race seems to have been that there is no special necessity for them to learn any language other than their own, and however narrow that view may be, it seems to have been pretty generally followed, and the result has been that foreigners usually have been compelled to learn English in order to do business with the English speaking countries, whereas English speaking people find no difficulty in doing business with or traveling in commercial countries where foreign languages are spoken, because English has been so generally learned by the people in those countries.

As Great Britain has for centuries done an enormous foreign business without altering either its language or weights and measures, there seems to be no reason in this respect why it should be necessary to alter ours.

Now, as in this country, at any rate, the export trade with non-English speaking races can never be more than a trifling fraction of the total business transacted it would seem to the writer an absurdity to turn our own commercial world upside-down for any such trifling reason, and the more one thinks on this subject the greater such a calamity appears to be.

We use the avoirdupois weight exclusively in our business and not the troy weight, and for fractions of the pound we generally use decimals and not ounces and drams. We do not encounter any of the difficulties which some people claim are attached to our present standards. Raw silks imported from Asia are delivered to us in New York and charged up by the importing houses in pounds avoirdupois. Invoices of raw silks from Europe are charged here in kilograms, and the silk merchants send us a bill for this silk in kilos, extended to pounds avoirdupois. If importations of French merchandise were made, we would probably get an invoice calling for a certain number of aunes, which on the same invoice would be figured out into metres, at so many francs per metre. Of course the importer would have in turn to figure his metres into yards and figure his francs into dollars.

The aune, which is an old measure of 1 1/4 yds., is still in use on the continent and is not likely to go out of use, as the standard piece of silk goods is put up in folds 1 1/4 yds. long, and when further folded up the piece comes out a suitable size and shape. In folding our own goods, previous to sending them to the market, they are put up in the usual 1 1/4 fold (the aune), and by counting the number of folds in the piece the length can be readily arrived at.

As far as calculating is concerned, of which writer has a great deal to do, we never experience the least trouble, because it is our practice to use the decimal system in our figuring, but never the metric system. It would no doubt be troublesome if we had to make our calculations in pounds, ounces and drams, gallons, quarts, pints and gills, but there is no need of doing it in that way.

In regard to measures of length, our standard is of course the yard, divided into the usual half, quarter and eighth, which are quite close enough for all practical purposes, and are the divi-

sions for which the human mind seems naturally adapted.

What we wish to make plain is that under our present system we encounter little or no difficulty, either in our office calculations or in our mechanical work, and we can see an endless array of practical difficulties which would confront us if any change were made, and, as far as the writer can see, without the slightest benefit to be gained.

In our laboratory we have certain scales and measures graduated to the metric system, but the sole use to which we put these is in following out formulas for experimental work, which are given in text books printed in foreign languages.

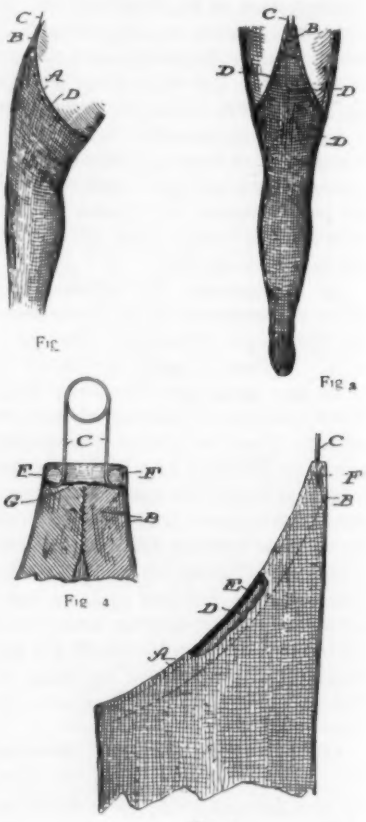
An Improved Stocking.

The accompanying illustrations show a stocking recently patented and designed to secure a better support and fit, and to overcome the objections and difficulties incident to the use of the ordinary stockings and stocking-supporters — such, for instance, as the insecure connection of the supporters with the stockings, the inconvenience of application and adjustment, the tendency of the top of the stocking to swerve to one side or the other, and the sagging of the stocking between the points of suspension.

Fig. 1 is a side view, and Fig. 2 a front elevation, of the stocking as in use. Fig. 3 is a side view of the upper portion of the stocking colapsed, and Fig. 4 is a face view of the inner side of the tongue at the upper end of the stocking.

The upper edge of the stocking is sloped in oblique, tapering form to present when flattened out, as shown in Fig. 3, an inwardly and upwardly curved edge, A, forming at its front an upwardly-projecting tongue, B, to which is connected the supporter, C, the upper end of which may be held in any suitable way.

The upper end of the stocking-leg is sloped upwardly from rear to front diagonally, and the upward supporting strain is exerted at the upper end of the sloped portion, so that the upward strain is exerted practically



throughout the edge of the stocking in such manner as to draw every portion of the edge upward.

By this construction the upper edge of the stocking will be held taut and all sagging at points away from the point of connection of the supporter will be avoided. A practically direct upward strain is secured, which will draw the stocking up firmly on all sides. At the same time the inclined or sloped edges of the stocking improves the appearance and avoids the

abrupt squared-off upper end of the ordinary stocking.

The inventor claims that the oblique tapering formation of the upper end of the stocking-leg communicates a feeling of superior comfort to the wearer, which is enhanced by the knowledge of its absolute security.

To aid in securing a snug fit at the upper end of the stocking, a casing, D, is provided, in which is fitted a rubber band, E, which gives a tension to the upper end of the stocking. This rubber band, E, will ordinarily be employed in all grades of stockings except those made of unstretchable fabric.

For connecting the supporter to the tongue of the stocking an inverted or downwardly-opening pocket, F, is provided, whose mouth, or orifice, G, opens downwardly and is contracted, so that a double expanding hook, which may be as shown or of any other suitable construction, can be inserted and will expand to lock itself within the pocket. By this means the supporter is secured to the stocking-leg so that it may be quickly attached and detached and there will be no danger of accidental detachment. This pocket formation will be found useful in stockings generally, but is of especial importance in the particular form of stocking shown.

—The United Kingdom and the United States together use nearly one-third of the whole of the wool in the world, in the ratio of 45 and 55 per cent. respectively of that quantity. There is, however, one salient difference in the two countries. Whereas the United Kingdom exports woolen goods in excess of its imports to the value of $55,000,000, the whole of the woolen goods manufactured in the United States are consumed in the country, a fact which is very expressive of the enormous capacity which it has for the absorption of manufactures.

The Care of Leather Rolls in Cotton Mills.

BY BEN SHAW.

Leather rolls may have a long life or a short one, according to their use or abuse. The proper handling of rolls necessarily begins with the covering. A roll, to be just right, must combine firmness with a certain amount of elasticity. To insure this result, wherever possible the felt should be cut on the bias, and a leather cot made, instead of winding on as a fillet. The glue must be of just the right thickness and only enough used to do its work well. Any excess of glue works out at the seam, hardens and causes a ridge in the roll, resulting in cut work.

While the leather roll is never in so nearly a perfect condition as when finished without any dressing, yet in the various card room processes it becomes necessary to varnish the front rolls to prevent the "licking up" of the roving ends.

Back rolls are covered with the grain or smooth side out, and then buffed or polished in a lathe. A thin coating of gum Senegal may be applied which will tend to preserve the leather. Front rolls are covered flesh side out and smoothed down slightly. This gives a better surface on which to apply the varnish.

A very satisfactory varnish for rolls is made by mixing ordinary carpenter's glue with acetic acid, allowing it to stand until dissolved, then adding Venetian Red paint. With a little judgment this may be brought to the right consistency to use. Care must be taken in the use of acetic acid, as an excess will penetrate leather, cutting the glue and loosening the covering.

Doubtless right here some carder will object to the use of Venetian red, claiming that nothing will give so smooth a body as English vermilion. So far as it goes, that is very true, but the foregoing mixture, made up with Venetian red, can be ground as

fine as desired in a paint mill, and the finished roll will have a smoothness equal to that of English vermilion. As every paint shop is supplied with a grinding mill, the grinding costs nothing.

Venetian red has two distinct advantages over English vermilion. First, its cost is only about one-fourth as great; second, the basis of English vermilion being mercury, it tends to produce electricity in the railway and drawing processes.

The first coat of varnish applied to newly covered rolls should be thin and allowed to dry thoroughly. Then give them a second and third coat, and the result will be a good wearing surface.

When it is found necessary to revarnish rolls, they should first be placed in a lathe and trued down slightly with fine sandpaper, to remove any dents and make a uniformly even surface, then given one or two coats, as may be found necessary.

Hot varnish, or even warm, should never be applied to rolls, as it is almost certain to cause the leather to flake or scale off.

Shell rolls should always be paired up by gauging with some sort of a straight edge, in order to get rolls of as nearly an equal size as possible on the same arbor. A slight difference will not be noticed, as the rolls are a trifle loose, and the arbor being slightly crowning, they would have a tendency to find their correct positions.

In placing the rolls in the machines endeavor to have the lap run with the work, for, if run in the opposite direction, the constant resistance of the cotton in drawing will tend to rough up the edge of the lap and soon spoil the roll.

It is very essential that every traverse rod shall be working properly in order, so far as possible, to give every part of the roll an equal amount of work. If they are not working, a dent is formed in the roll in a very short time.

Unless a sharp watch is kept, the oiler will get too much oil on the arbors, and it will work onto the rolls, softening and ruining them in a very short time.

An operative who spits on his hand and rubs the collected cotton off the rolls does his share in the work of destruction. If he is accustomed to doing his work that way, the chances are that he will also scrape the roll and scratch the leather instead of throwing off the stirrup and taking out the roll to clean it properly.

Before starting up new frames having fluted bottom rolls, the flutes should be thoroughly carded and polished with a mixture of oil and whiting, in order to take off any wire edge, and thus prevent their cutting the top rolls.

Probably more rolls are spoiled by heavy weighting than in any other way. It is, of course, impossible to give a rule for roll weighting which shall fit all conditions, but if extreme care is taken to weight only as heavily as is absolutely necessary to insure the proper drawing of the stock, a considerable saving on the roll bill will doubtless be effected.

If the yarn should be drawing unevenly, do not jump at conclusions and charge it all up to improper covering of rolls. Look at the fluted roll and see if it is not dull or in need of carding out. Many rolls go back to the roll shop for re-covering when the trouble lies elsewhere.

A liberal amount of personal attention to the question of rolls by the overseer will prove of great advantage to the mill.

—"Retting," or "rotting," is a process in which the vegetable gums surrounding the fibre are dissolved and the fibre is at the same time freed somewhat from the woody interior portion of the stalk and also from the thin outer cuticle. These gums are not soluble in water, but they are destroyed by a kind of putrefaction which takes place when the stalks are immersed for some time in soft water or are exposed to the weather.

Designation of the Direction of Twist in Yarn.

The direction as well as the amount of twist in yarn exerts an important influence on the appearance of the woven fabric.

By alternating threads of opposite twists in both warp and filling of a plain weave, excellent tricot effects can be obtained running in either direction.

The direction of the twist affects materially the appearance of the cloth woven with a twill or similar weave. In some goods it is desirable to have the twill effect as pronounced as possible; in others the aim is to obliterate all trace of the twill and make the face smooth. It is necessary that not only the yarn sizes, set of the cloth, quality of stock, processes of manufacture, and amount of twist should contribute to the effect desired, but also that the direction of the twist in the yarn, be adjusted to the same end.

In the manufacture of plain and fancy twist yarn, the direction of the twist is important, both in the single strands and when two or more are twisted together.

As the direction of the twist is such an important factor in the manufacture of yarn and cloth, it is important that the manner of designating this direction should be uniform.

Unfortunately this is not the case. A thread can be twisted in but two ways, to either one side or the other, and the words right and left have been generally adopted to distinguish these two directions in yarn twists, but the confusion has been caused by a disagreement as to which is right and which is left. The same direction of twist is designated both right and left by different individuals and the divergence is so widespread that it is necessary to first determine what direction is meant by right or left hand twist before a statement in regard to the direction of yarn twist can be accepted.

Our attention was recently drawn to this subject by the necessity of adopting one or the other designations in The Guide to Weaving, soon to be issued in book form. As our desire is to contribute to uniformity rather than to the adoption of the particular method with which we are familiar, we addressed a number of letters to manufacturers and textile schools in different parts of the country, asking what was the practice of each in regard to the designation of the direction of the twist of yarn.

The replies showed much confusion, the advocates of each form of designation bringing forward apparently convincing arguments to support their use of the one or the other word. As a matter of general interest we will give the substance of these arguments. In each letter a sample of yarn twisted in the direction shown at Fig. 1 was enclosed, and the references in the replies are to this direction of twist.

No. 1. "I have always called such a twist a right hand twist, and wherever I have been employed it has been called the same. I attribute the difference of opinion largely to two reasons; the user of the yarn in the first place will naturally take the yarn between his thumb and finger and decides if it gives more twist by turning to the right with the right hand, it must be a right hand twist, and if he finds he can put more twist into it by turning it to the left, it is a left hand twist. The machine maker and oftimes the spinner instruct those who put the bands on the spindles from the cylinder that they must put the leading side of the band to the left side of the spindle or whorl, and by so doing they claim they get what is known as a left hand twist, which from my point of view, is in reality a right hand twist."

No. 2. "In reply to your question as to the twist of the sample being either right or left, I will say that my experience is to call it right twist. I

was designer in the heavy woolen district of York, England, for ten years, and when ordering would call the twist right, if the twist required was the same as shown in this sample."

No. 3. "I call the twist of your sample of yarn left twist, and my explanation why, I can best give by illustrations of a left, Fig. 2, and a right Fig. 3, twisted thread. The arrows indicate the direction of the twist.

"In your sample the twist runs as in Fig. 1, from right to left."

No. 4. "The sample of yarn that you enclose is what we would call a left twist yarn. We know two mills in this city that would give exactly the opposite names to the twist of a certain yarn. We, however, have adopted the system of calling such a yarn as the one you enclosed in your letter a left twist, as this seems to be the one most generally used."

Fig. 1.

Fig. 2.

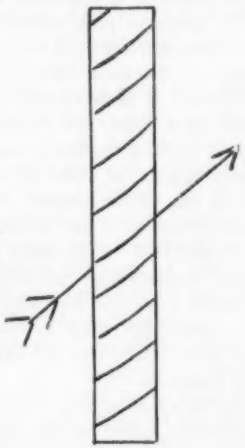


Fig. 3.

No. 5. "I have always understood that a yarn twisted as enclosed sample was known as a left hand twist. The direction of the twist is seen by holding the yarn in the left hand, nearest the body, then taking hold of the other end of the yarn farthest from the body and noting in which direction it is necessary to twist the right hand thumb in order to impart twist. For example, if the right thumb has to move to the right to impart twist, the right thumb being farthest away from the body and the yarn held by the left hand, the yarn will be right twist. If the right thumb moves to the left, the yarn will be left twist."

No. 6. "The enclosed thread is called right twist in this mill and in all other mills with which I have had relations or transactions."

No. 7. "In regard to the twist of yarns the sample you sent I should name a right hand twist. I have gone into this question to a certain extent and find that the majority of cotton spinners have a right hand twist which is the opposite of the so-called right hand twist of the majority of the woolen spinners."

The authors of the French and German text-books without exception, so far as we have examined their writings, agree with the writer of letter No. 3, but the fact that they devote so much space to impressing upon their readers the importance of employing their method and the other fact that textile workers from Europe that have come to this country, vary in their designations of the directions of the twists, leads us to suspect that the

practice abroad may vary as in this country.

At Fig. 4 is shown a rope made by twisting three strands, a, b, c, together. These strands are untwisted at each end for a short distance. If the untwisted strands are to be twisted, it is obviously necessary that the lower strands, a, b, c, must be carried successively to the left. Consequently if reference is made to this act

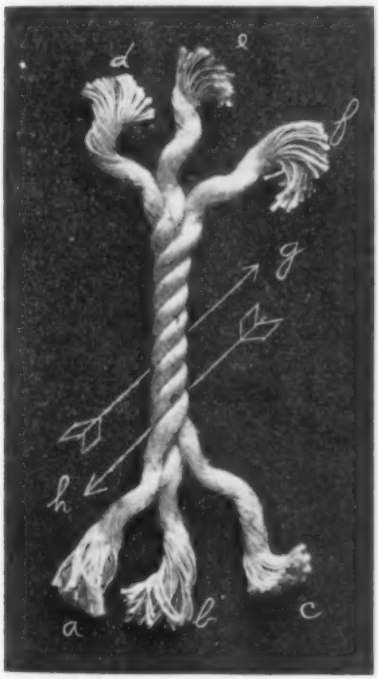


FIG. 4.

of twisting, the direction of the twist in the rope must be termed left hand, and the opposite twist right hand.

This line of reasoning answers very well for one end of the rope, but if the other end is referred to, with the observer's position unchanged, the opposite conclusion is reached, as the upper strands, d, e and f, must be carried successively to the right to form the rope, making the twist from this point of view right hand.

The direction of the strands is indicated by two arrows; if the arrow, g, is selected to indicate the direction of the twist, it is right hand; if the arrow, k, it should be styled left hand.

These arguments pro and con are certainly not convincing, except as to the need of uniformity, and the question must be settled apparently by no line of reasoning but by the adoption of that method that is in most general use.

The replies to our inquiries lead us to conclude that the twist of the rope shown at Fig. 4 is more often called left than right hand and we have therefore adopted this designation. This method has the additional advantage of the endorsement of at least two leading textile schools of the country. We should, however, be glad to hear from any of our readers on this subject, either in support of or opposition to our conclusion.

Direction of Motion.

BY WILLIAM W. CROSBY,
Principal Lowell Textile School, Lowell, Mass.

(The following article by Prof. Crosby, which appeared in the Lowell Textile Journal of March, 1900, shows that the author has recognized the importance of and sought to promote uniformity in the designation of direction of yarn twist. Referring to the article the Professor writes us as follows: "In view of the article, Direction of Motion, you will see that we have adopted a standard for naming the twist at the Lowell Textile School, and it is thoroughly understood within the school what is meant. It does not, however, correct the situation outside, and those mills that name their twist to the other hand would probably have some criticism to make, but it is obvious that we must come to a standard somewhere."—Ed)

In naming the direction of a given motion there must, of course, be assumed some datum point, line, plane, or combination of two or more of the three. If you wish to express the linear velocity or speed of a railroad train, you do so by stating the number of miles the train recedes from a given point, in or beside the track, in

an hour; but the same numerical quantity might equally well express the speed with which the train approaches some other point beyond. This leads us to define our motion not merely for velocity but also for direction; this we may name to the right or the left, we meanwhile standing beside the track, if another person be facing us across the track, the train which has gone to our right will have gone to his left; thus we see that in naming such a motion, one particular point must be chosen as the reference point.

This same principle must be borne in mind when naming the direction of rotation of a shaft; for a given shaft running in a fixed direction will be named differently by persons facing one another, standing at its opposite ends. Motions upward, to the right, right-handed, "with the sun," "clockwise," or with the hands of a watch are considered as positive (plus), and are effected with the + sign; motions downward, to the left, left-handed, "against the sun," "counter clockwise" or against the hands of a watch are considered negative (minus) and are affected with the — sign.

In this way we can fix exactly the various motions with which we may wish to deal, and their magnitudes. A right handed screw is defined as one with threads so cut that when it is held pointing away from the observer and turned in the direction of the hands of a watch, it will enter the nut; if such a screw be viewed from the side, the direction of the threads is upward to the right.

In naming the twist of yarns there seems to be considerable indefiniteness and confusion; for one person will say that the twist should be named to correspond with the screw where the direction of the fibre in the yarn is the same as the screw threads; another says that the direction of the spindle that spins the yarn should be the criterion; again it is said that the twist should have the same name as the motion that produces it, named looking toward that end of the strand where the twist is applied.

If you twist two strands of yarn together, turning right-handed while another person holds the other end stationary, the resultant strand will be right twist; if now the other person twists his end right-handed as he views it, more twist will be put in; if while you turn right-handed he turns left-handed, as he views it, the yarn will merely revolve and no twist will be put in.

It will be noticed that the direction of the strands in a bit of yarn with right twist as named above, is directly opposite to the threads of a right-handed screw. This would seem to cause some confusion as in the case of those who name the twist from its correspondence to the right or left-handed screws, but we can find some element of logic in this, for the word "twist" is essentially a verb and when we have named a certain strand as having a right twist, we have named it to correspond with the motion that produces it, but the word "screw" is primarily a noun, the verb being a secondary idea and that is named with reference to the use of the article itself.

To sum up, then, right twist as applied to yarns is that twist which is produced by turning the end of the yarn that is toward you, the other fastened to a distant point, in the direction of the hands of a watch as the watch is held in front of the turning strand, its face being toward the observer.

Just why that part of the body that is toward the south when one is facing east should have been called "right," I cannot say, unless, other than it should have some name it were because it is usually the stronger and abler of the two; but the fact remains that it is so named and we must adapt ourselves to it.

Be silent when you give; speak when you receive.—Spanish proverb.

Memoirs of a Veteran Master Mechanic.

EBEN GOULD.

VIII.

(Continued from November).

In 1857, the time of the great panic, there was quite an excitement among the different woolen mills in New England about trying to make what then was called Garibaldi cloth, named after the Garibaldi who was very prominent then owing to the war in Italy. All the mill agents having samples of this cloth tried to have their mills imitate these goods. The cloth consisted of a plain groundwork of any desired color, with a great many small spots of any desired color on the face of it. Mr. B—— came to me one day and said:—

"Do you know how these spots can be made and put in the cloth?"

"Well, Mr. B——, you and all other carders have been trying all your lives to keep cards from making nubs, and I think it is very funny if they cannot make a few now they are wanted."

That night I thought over the affair and got the way clear in my mind how it could be done. The next morning, I said to Mr. B——:—

"The thing can be done very easily; you can weave these goods as fast as you can weave plain goods."

Then I told him how it could be done. The method was so simple and easy that every one was searching for something more difficult and overlooked the only way that it could be done. At that time, the woolen business was "clean done;" many mills were shut down for the winter, but quite a number of them were running, trying to make Garabaldis, and each one tried to keep their method of making the cloth a profound secret.

My plan worked all right, and the machinery was soon covered with various colored spots. The mill just rushed these goods until the time came for them to be sold. It appeared that some parties in New York were about to import a large quantity of these Garibaldis, and had sent out samples to aid them in selling the goods when they arrived. First there appeared a notice in the papers about these cloths; later there appeared a notice to the effect that they would be on sale about a certain date. Soon after the last named notice, another appeared stating that on a certain day, they would be sold at auction in John Street, New York City. During this time not a yard of the cloth had left our mills, but every storehouse was packed full of cases of Garibaldis. Just before the date of the sale, a single case of each kind of the goods was sent to New York, with a memorandum of how many there were of each kind in stock.

Well, the day of the sale came, and we were all on the watch for results. Very soon dispatches began to arrive to ship such a case of goods to such a place, and so on until the last case of the goods was shipped direct from the mill to the purchaser. The mill now stopped making the goods, knowing they were only a novelty and would not have a long run. During this hard winter, however, the mill made more money than it had ever done before, as the cost of these goods was not over 62 cents per yard, and they sold from $2.50 to $3.50 per yard. No one outside the mills knew where the goods were made.

These spots were made as follows: We took two old waste cards from the card room, put them in a room at the dyehouse where they could be locked up to keep all intruders away; we then set them up and rigged the comb shaft with a stop motion so as not to comb the stock from the doffer until it was in proper condition. I selected wool with a short staple, and in the process of scouring and coloring gave it rather more than the ordinary amount of boiling, which would naturally make it more crimpy and more easy to nub. I then set the fancy off so as not to throw the stock from the cylinder, fed the wool in the usual

way on the feed apron, which was rigged with a stop motion to stop the feed when enough was on the card, then in a few minutes the wool would be converted into small nubs, just the size needed to make the spots in the cloth. When nubbed enough the comb would be started and the stock combed from the doffer. Then the comb stopped and the feed started for another batch. The nubs were bagged and sent to the pickers, there to be mixed with the wool for making the filling and then woven into the cloth; no nubs were used in the warp yarn.

"I WOULD TAKE OFF THOSE CLOTHES."

Not wishing everyone to know what was being done on these waste cards, I hired two small boys, who had never worked in a mill, to come in and tend the waste cards. When anyone asked them what they were doing, they told them they were tending waste cards. They did not know nubs from waste, but they were waste cards all the same. After weaving, washing and fulling, it was but little work to do the rest of the finishing, as very little gigging was done and little shearing, but the goods were given a good, even, fair pressing.

After we were fairly under way making Garabaldis, I took a trip to Woonsocket on a visit to my father's house. One morning while there, I was on the street as the help were going to their work in the Harris woolen mills. I heard the boss carder telling a friend of his about their attempts to make the spotted goods, and how they were going to do it. I did not say anything, but knew that the Harris Mills would never make the Garibaldi goods in that way. I afterwards learned that they got tired of trying and gave it up.

Several years later, after Richard Dewso left the Harris mills and while he was agent of the Merchant's Mills, I put on a suit of clothes I had made from the Garibaldi cloth manufactured in the mill, and went down to the shop. Mr. Dewso, seeing me dressed in them, said:—

"If I were you I would take off those clothes; they are the worst looking things I ever saw."

"I do not wonder they look bad to you," I said, "and if I had worked in a mill where they had tried to make these goods and failed, I think they would look bad to me also, but as I worked where they were a success, and many of them were made, they do not look bad to me, but instead look pretty nice."

"What do you mean?"

"The cloth that this suit is made of was manufactured in this mill along with thousands of yards of the same thing," I replied.

He could hardly believe it. I then asked him if he knew about the big sale of imported Garibaldi goods in New York. He said he did.

"Well," I said, "every yard of that cloth was made in the old Maverick Mills." That was the first he had heard of the success this mill had made on spotted cloths, and he never spoke again of the bad looks of my spotted clothes, but asked me many questions as to how they were made.

I believe that the imported Garibaldis arrived in New York shortly after the sale of our lot, but I never heard whether they sold well or not.

(To be continued.)

New Machinery and Processes.

This department is designed to present from month to month a brief mention of new machinery, devices, and processes being brought out in this country and abroad, that are of interest to textile manufacturers. It is not a list of patents, but of improvements coming on the market.

Interested parties are referred to the manufacturers for further information. These items are published without charge and regardless of advertising consideration, the idea being to present to our readers a systematic monthly record of new machinery, etc. of interest to textile mill men.

We invite machine builders and others to send us such information for this department.

A Doffing Device for Ring Spinning Frames. D. E. Carey, Lawrence, Mass., is the inventor of an apparatus, which will soon be put on the market for doffing ring spinning frames semi-automatically. It can be attached to any spinning frame. The doffing mechanism is simple, and when not in use is out of the way above the operator's head. The movement of a crank quickly lowers the apparatus which simultaneously doffs the frame and puts the new bobbins in place on the spindles. The apparatus breaks the end after the new bobbin is put in place on the spindle and is raised to a position above the operator's head. In raising the apparatus to this position it automatically places a set of empty bobbins in places for the next doff, and the full bobbins are now in a very convenient place to be gathered rapidly. The whole operation stops the frame from twenty to thirty seconds. There is nothing about the apparatus which will interfere with the hand doffing if an end should break or any accident should happen. In spinning coarse counts, the saving in time is a very considerable factor, and it is also claimed that there is considerable saving of labor.

Hand Threading Shuttle. The American Loom Company, Readville, Mass., has recently placed on the market an improved shuttle for cotton looms which can be threaded by hand, thus obviating the unhealthy practice of sucking the thread through the eye of the shuttle. The thread when once in the delivery eye cannot pass back. The wood of the shuttle is very little cut away to accommodate the threading plate. They have been endorsed not only by manufacturers but by labor organizations.

Cotton Shear. The H. E. Pender Machine Co., of Worcester, Mass., have recently placed on the market a new cotton shear. The frame is a radical departure from old style frames in common use. Being a square frame it is claimed to be more serviceable, better balanced, less liable to vibrations and more easily adjusted. They have been installed in several leading mills.

Cloth Inspecting and Trimming Machine. The H. E. Pender Machine Co., of Worcester, Mass., are placing on the market a cloth inspecting and trimming machine with a

positive drive and reverse motion worked by the foot. The treadle is divided in the centre, each part working separately, one being used for forward and the other for backward motion of the cloth. The machine is also built with three brushes and measuring attachments.

Twister Stop-Motion. The Draper Company, Hopedale, Mass., have recently made improvements in the T. H. Smith Twister Stop-Motion. The claims for this machine are that it is simple, cheap and effective and can be applied when the frame is running. It is adapted for frames in which a single line of rolls is used, the yarn being delivered from the under side of the roll.

Head Motion Attachment for Leno Weaving. W. A. Hilton, Utica, N. Y., has invented and is placing on the market an attachment for a leno head motion by which the motion and parts are much simplified. It can be attached to any ordinary dobby head. He is also bringing out an improved doup heddle.

Automatic Cop Builder for Mules. The Societe Alsacienne de Mulhouse, Germany, have placed on the market an automatic device for regulating the tension of the yarn while being wound on the bobbin in mule spinning. It requires adjustment only when a change in the size of the yarn is made, and is said to need no attention from the spinner during the winding of the bobbin. It is operated by a finger attached to the arms carrying the faller wire.

Grinder for Leather Rolls. Dronsfield Bros., Limited, Oldham, England, are placing on the market an improved grinder for leather rollers. The grinding disc is covered with a ribbon of emery or glass-coated filleting. The rotary disc traverses back and forth along the length of the grinder.

Condenser for French Drawing. J. Litty, Guebwiller, Alsace, has invented and recently placed on the market a device for taking the place of the leather aprons in French worsted drawing. It consists of two corrugated plates vibrating in contact with each other. For fine slubbing a corrugated roll is substituted for the upper plate. The attachment is manufactured and applied to either old or new machines by three machine builders. Societe Alsacienne de Constructions Mechanique, Mulhouse; Martinot, Galland et Cie, Guebwiller, Alsace; N. Schlumberger et Cie, Bitshwiller-Thann, Alsace. It is stated that the device is giving excellent results in the mills.

Automatic Dyeing Machine for Raw Stuffs. Eduard Esser and Co., Goerlitz, Germany, have patented and are placing on the market an automatic dyeing machine for raw stock. The circulation is obtained by means of an upright shaft in a pipe in the centre of a round dye tub. On this shaft are wings that force the dye liquor up or down as desired. The shaft is driven from a pulley fastened to the side of the tub. From this pulley a belt passes over carriers to the pulley in the centre. The frame work supporting the driving pulley and belt is hinged so that it can be swung out of the way when removing stock from or placing it in the tub.

Jute Preparing Machine. Douglas Fraser & Sons of Arbroath, Scotland, have recently placed on the market two improved machines for preparing jute. One is a ring drawing frame with which it is claimed that a better "pinning" of the sliver and a shorter "nip" at the drawing rollers is obtained than with the ordinary push-bar machine. The other machine is a spiral roving frame; the arrangement of the expansion cones forming a novel feature of this machine.

DYEING DEPARTMENT

Dye Recipes for December.

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16 page pamphlet, in convenient form for preservation. Subscription price for the TEXTILE WORLD with the Dyers' Supplement is $4.

Recipe No. 177.

Brown on Cotton Yarn.

Direct Brown Y P on 100 lbs. of cotton yarn.

Prepare the dye bath with

3 lbs. Direct Brown Y. P.

(A. Klipstein & Co., 122 Pearl St., New York.)

30 lbs. Common Salt.

Enter at 170° F., and dye at a boil for one hour.

Direct Brown Y P possesses excellent coloring power and dyes even and full shades of brown.

Recipe No. 178.

Scarlet on Worsted Yarn.

Tyemond Scarlet C B on 100 lbs. worsted yarn.

Prepare the dye bath with

3 lbs. Tyemond Scarlet C B.

(Read, Holliday & Sons, Ltd., 7 Platt St., New York.)

10 lbs. Glauber's Salt.

3 to 5 lbs. Acetic Acid. (To exhaust.)

Enter yarn at 104° F., and bring the bath to a boil in about ½ hour, and the dyeing continued at a boil for ½ hour longer, exhausting the dye bath as completely as possible.

In dyeing goods not easily penetrated, it is well to add 5 lbs. of Acetate of Ammonia at the start, exhausting toward the end with Acetic Acid.

Tyemond Scarlet C B possesses good fastness to milling and stoving and ordinary exposure.

Recipe No. 179.

Brown on Worsted Yarn.

Domingo Chrome Brown B on 100 lbs. worsted yarn.

Prepare the dyebath with

3 lbs. Domingo Chrome Brown B.

(C. Bischoff & Co., 88 Park Place, New York.)

10 lbs. Sodium Sulphate.

10 lbs. Acetic Acid.

Enter at 130° F., bring to a boil and dye at this temperature for about 1 hour, exhausting the bath by adding

1 lb. Sulphuric Acid.

After treat ½ hour at the boil by adding

2 lbs. of Potassium Dichromate to the dye bath.

Domingo Chrome Brown B withstands fulling and washing excellently, and may be classed with the alizarines for fastness.

Recipe No. 180.

Orange on Cotton Yarn.

Tetrazo Orange T G on 100 lbs. of cotton yarn.

Prepare the dye bath with

3 lbs. Tetrazo Orange T G.

(New York and Boston Dyewood Co., 156 William St., New York.)

30 lbs. Common Salt.

Enter at 170° F., bring to a boil and dye at a boil for 1 hour.

Tetrazo Orange T G produces an even and full shade of orange and possesses all of the characteristics of the direct cotton colors.

Recipe No. 181.

Pink on Cotton Yarn.

Benzo Fast Pink 2 B L on 100 lbs. cotton yarn.

Prepare the dye bath with

1⅗ ounces of Benzo Fast Pink 2 B L.

(Farbenfabriken of Elberfeld Co., 40 Stone St., New York.)

5 lbs. Glauber's Salt Crystals.

1 lb. Soda Ash.

Enter yarn at 170° F., and dye at a boil for ¾ to 1 hour.

Benzo Fast Pink 2 B L exhausts the dye bath well and possesses excellent fastness to light. For general purposes it will be found to be an excellent pink.

Recipe No. 182.

Yellow on Worsted Yarn.

Chinoline Yellow on 100 lbs. of worsted yarn.

Prepare the dye bath with

2 lbs. Chinoline Yellow.

(New York and Boston Dyewood Co., 156 William St., New York.)

15 lbs. Glauber's Salt.

4 lbs. Sulphuric Acid.

Enter at 170° F., bring to a boil and dye at a boiling temperature for 1 hour.

Chinoline Yellow is an excellent yellow to use on wool and silk, and in the production of compound shades.

Recipe No. 183.

Red on Worsted Yarn.

Amido Naphthol Red 6 B on 100 lbs. of worsted yarn.

Prepare the dye bath with

2 lbs. Amido Naphthol Red 6 B.

(Victor Koechl & Co., 122 Hudson St., New York.)

15 lbs. Sodium Sulphate.

4 lbs. Sulphuric Acid.

Enter at 160° F., bring slowly to a boil and dye at a boiling temperature for 1 hour, exhausting the bath if possible.

Amido Naphthol Red 6 B is easily soluble and dyes very evenly. Its fastness to rubbing and alkalies is excellent, and it stands light well enough to answer all ordinary requirements.

Recipe No. 184.

Black on Worsted Yarn.

Sulpho Cyanine Black 2 B on 100 lbs. worsted yarn.

Prepare the dye bath with

6 lbs. Sulpho Cyanine Black 2 B.

(Farbenfabriken of Elberfeld Co., 40 Stone St., New York.)

20 lbs. Glauber's Salt.

5 lbs. Acetate of Ammonia.

Enter at 100° F., bring slowly to boil and exhaust slowly with addition of acetic acid.

Sulpho Cyanine Black 2 B. possesses excellent fastness to light, and in this regard may be considered one of the fastest blacks in the market.

It also possesses good fastness to washing and milling, and to acids, alkalies and carbonization.

Recipe No. 185.

Violet on Worsted Yarn.

Benzyl Violet 6 B on 100 lbs. worsted yarn.

Prepare the dye bath with

3 lbs. Benzyl Violet 6 B.

(A. Klipstein & Co., 122 Pearl St., New York.)

20 lbs. Glauber's Salt.

3 lbs. Sulphuric Acid.

Enter at 180° F., bring to a boil and dye at this temperature for 1 hour, exhausting the bath if possible.

Benzyl Violet 6 B produces an even and bright shade of violet.

Recipe No. 186.

Red on Worsted Yarn.

Chrome Fast Red G on 100 lbs. of worsted yarn.

Prepare dye bath with

3 lbs. Chrome Fast Red G.

Berlin Aniline Works, 213-215 Water St., New York.

10 lbs. Glauber's Salt.

4 lbs. Acetic Acid.

Enter at 120° to 140° F., and bring to boil. Boil ¾ of an hour, then add

4 lbs. Sodium Bisulphate,

and boil ½ hour longer.

After treat in a fresh bath for about ½ hour with

1½ lbs. Potassium Dichromate.

3 lbs. Acetic Acid.

Wash thoroughly and dry.

When dyed in this way and after chromed, Chrome Fast Red G possesses good fastness to milling, boiling in an acid bath, crabbing, carbonizing, light and calendering.

Recipe No. 187.

Blue on Cotton Yarn.

Naphtogene Blue B on 100 lbs. cotton yarn.

Prepare the dye bath with

4 lbs. Naphtogene Blue B.

Berlin Aniline Works, 213 215 Water St., New York.

1 lb. Soda Ash.

30 lbs. Common Salt.

Dye at a boil for 1 hour, rinse slightly and enter into a cold diazotizing bath containing

3 lbs. Sodium Nitrate,

13 lbs. Commercial Muriatic Acid,

and work 20 minutes.

Then develop in a cold bath made up with

¾ lb. Beta Naphthol,

¾ lb. Caustic Soda Solution (76° Tw.),

and work for 20 minutes more. Wash and dry.

Naphtogene Blue B is extraordinarily fast to light and also very fast to washing.

Recipe No. 188.

Black on Worsted Yarn.

Domingo Chrome Black F F on 100 lbs. worsted yarn.

Prepare the dye bath with

7 lbs. Domingo Chrome Black F F.

(C. Bischoff & Co., 88 Park Place New York.)

10 lbs. Glauber's Salt.

Enter at 180° F., bring to a boil and dye at a boil for ¾ of an hour.

Then add

5 lbs. Acetic Acid.

Continue boiling ½ hour and exhaust dye bath by adding from 1 to 2 lbs. of Sulphuric Acid. Cool somewhat, and after treat for ½ hour in a boiling bath containing

2 lbs. Potassium Dichromate.

Domingo Chrome Black F F is one of the very fastest blacks on the market, and will stand fulling and sunlight to a remarkable extent.

Recipe No. 189.

Red on Worsted Yarn.

Milling Red B on 100 lbs. of worsted yarn.

Prepare the dye bath with

3 lbs. Milling Red B.

(E. M. Thayer & Co., 106-112 Broad St., Boston.)

20 lbs. Glauber's Salt.

4 lbs. Acetic Acid.

Dye at a boil. The bath will thoroughly exhaust.

Milling Red B produces shades which are very fast to light and fulling.

Recipe No. 190.

Black on Worsted Yarn.

Azo Merino Black B on 100 lbs. worsted yarn.

Prepare the dye bath with

6 lbs. Azo Merino Black B.

(Cassella Color Co., 182 Front St., New York.)

15 lbs. Glauber's Salt.

4 lbs. Sulphuric Acid.

Enter at 170° F., bring to a boil and dye at a boil for 1 hour, exhausting the dye bath if possible.

Azo Merino Black B dyes very level, penetrates well, and yields full, bloomy shades, very similar to those of Logwood, which do not alter in artificial light. Its fastness to light alkalies, steaming, sponging is very good, as well as fastness to stoving and rubbing.

Recipe No. 191.

Scarlet on Worsted Yarn.

Tyemond Scarlet 6 B on 100 lbs. worsted yarn.

Prepare the dye bath with

3 lbs. Tyemond Scarlet 6 B.

(Read, Holliday & Sons, Ltd., 7 Platt St., New York.)

10 lbs. Glauber's Salt.

3 lbs. Sulphuric Acid.

Enter at 104° F., bring to a boil in ½ hour and dye at this temperature 1 hour, exhausting the dye bath by adding an additional

2 lbs. Sulphuric Acid.

Tyemond Scarlet 6 B possesses good fastness to scouring and milling and will not bleed into white.

Recipe No. 192.

Red on Worsted Yarn.

Anthracene Chrome Red A on 100 lbs. worsted yarn.

Prepare the dye bath with

3 lbs. Anthracene Chrome Red A.

(Cassella Color Co., 182 Front St., New York.)

10 lbs. Glauber's Salt.

4 lbs. Sulphuric Acid.

Enter the yarn at 100° to 120° F., bring to a boil in 20 to 30 minutes and after 1 hour add

2 lbs. Potassium Dichromate,

and continue the boiling for ¾ of an hour.

Anthracene Chrome Red A dyes very evenly, producing results very fast to washing, milling and acid. The fastness to light is also excellent, and it is one of the most valuable dye-stuffs in the market for the production of red shades upon wool.

The After-Chroming of Acid Blacks on Woolen Piece Goods.

Although Logwood still occupies a strong position in the woolen piece dye house for the production of blacks upon such fabrics, yet it does not have the field to itself by any means. During the past few years there have been produced by the dyestuff manufacturers a constantly enlarging series of colors that are remarkable for the closeness with which they approach the shade of logwood when properly dyed upon woolen material.

The old types of acid blacks, which were simply dyed from an ordinary acid bath with glauber's salt, marked a long step towards the successful production of the black dyestuffs of the present day, which are slowly but surely encroaching upon the ground of logwood.

The art of black dyeing, as applied to woolen fabrics, must necessarily commence with the scouring, for no dyer, however skillful, is capable of delivering level dyed pieces unless the fabrics have been cleansed of all dirt, grease, oils, etc. Formerly it was the practice to chrome and then apply the dyestuff, but the better known artificial blacks of the present day are applied by a process that is but a slight modification of the ordinary acid dyeing method, the details of which may be briefly summarized as follows:

The thoroughly scoured and rinsed yarn or piece goods is dyed in a bath containing the necessary quantity of dyestuff, together with glauber's salt and a small quantity of acetic acid, say, four (4) per cent. as recommended by Messrs. Sykes & Street for their Acid-Chrome Blacks, although some products may require the addition of sulphuric acid at this stage. The goods are entered at a temperature of 170 degrees F., brought to the boil and boiled for one half hour, during which time much of the color is taken up by the wool, when the bath is cleaned or exhausted by the addition of not more than two (2) per cent. of sulphuric acid, previously diluted with water, and the boiling continued for at least one-half hour additional.

The final operation is to add about one and one-half (1 1/2) pounds of bichromate of potash, or equivalent bichromate of soda, and boil for one-half hour, when the bath will be found to be, in almost every instance, clear, and the goods dyed a handsome, deep rich color, difficult to secure in any other way.

The Acid Chrome Blacks of Messrs.

Sykes & Street are prominent types of this general class of dyestuffs, and which are well known wherever woolen cloth dyeing is practiced successfully.

Other modifications of the above detailed process are possible, and no doubt individual dyers will be able to make valuable modifications in it, to meet the needs and requirements of their own particular work.

The time is at hand when the rather cumbersome mordanting and dyeing processes are beginning to be relegated to the rear, in favor of the more advanced and practical processes, specially where equally desirable results are secured.

Diazotizing and Developing Machine.

ROGER WILLIAMS.

My attention has been called to what was recently offered to German dyers as an improved machine for diazotizing and developing yarn, and its operations as compared with the American machines prompts the following reflections regarding the methods for this process:

One very great defect of this machine is of the very small quantity of yarn handled—two pounds. There is no advantage in diazotizing yarn, it is in fact, injurious to cotton or cotton yarns, because nitrate of soda and muriatic acid or sulphuric acid used in the diazo bath forms nitrous acid, which warmed up would tender the thread before it could be washed off in water.

Again it would be nowhere as compared with the machines used in this country for that purpose, namely, the Klauder-Weldon, which dyes, diazotizes and develops from 250 to 450 pounds at one operation with only one handling, but it has to be extracted after.

In the dyehouses around Providence, two men dye, diazotize and develop from 400 to 600 pounds in ordinary yarn tubs; where machines are used, from 750 to 1,400 pounds a day.

The advantage of operating with large lots at each dyeing is easily seen because each lot is uniform and large, whereas in the German machine practically only 4 pounds is handled, making twenty-five lots to each hundred pounds dyed. Furthermore, I think it would take longer to do 100 pounds on this machine than it would by hand labor in this country. When machines are used here there is a dye storage tank and pump, and the material is dyed, diazotized, washed and developed with one handling. Better results are obtained by this method but the shade becomes a little browner from carrying out the three operations in the same machine.

Boiler and Bleaching Kiers.

Not every boiler or plate iron worker knows how to make properly constructed boiling and bleaching kiers for use in textile industries. It is a distinct specialty, and very few have given the consideration to the subject and made it a distinct line of business as have the William Allen & Sons Co. of Worcester, Mass. Prior to 1896, cotton bleacheries and dye works usually got out their own specifications and turned the job over to some local boiler or plate iron works. It was at this time that the firm of William Allen & Sons, which has since been succeeded by an incorporated company, who had built a number of bleaching kiers for textile establishments, introduced the Allen improved boiling and bleaching kier as a textile specialty, combining the improvements which their experience in building kiers had demonstrated to be successful. They have improved the model from time to time, and patented some of their special features, and the kier that they are now putting on the market combines every advantage that long experience can suggest.

The principal items in such an apparatus are economy of steam and

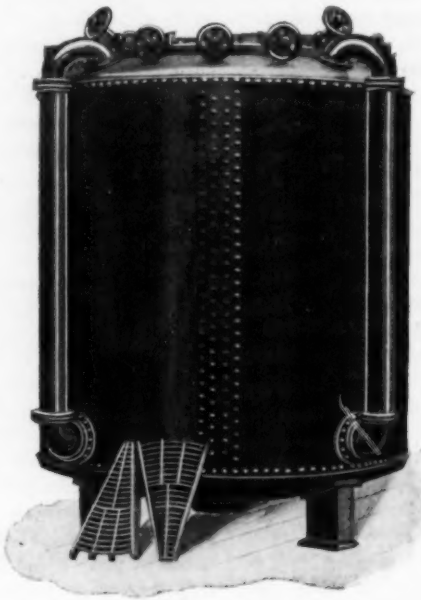
labor, and they have reduced the amount of steam required to about one-third the ordinary amount, and the labor about one-half. The vomit pipes instead of being in the centre are on the outside, which avoids the snarling and tearing of the goods while running in and out. It also gives more room and saves labor. The circulation of the liquor, which is very rapid, through the outside pipes, is obtained by ejector pipes within them and by spray nozzles peculiar to this kier from which the liquor is ejected, a perfect distribution of the chemicals over the top of the goods is insured. This rapid circulation of the liquor decreases the pressure in the space below the grates, which in turn causes an equally rapid circulation of the liquor through the goods.

The circulation and boiling steam systems are independent of each other and are contained entirely within the kier.

Two valves, one for each system, are all that is required for the operation of the kier. Each vomit pipe is provided with a tell-tale which indicates the condition of the circulation.

The rivets which come in contact with the goods are driven countersunk, giving a smooth surface, avoiding any injury to the goods.

This kier is built in any size up to 9 ft. in diameter, and of any required height. It is furnished with a manhole on top, 5 ft. or less in diameter.



THE ALLEN BLEACHING KIER.

The kier is also made with a cover, hinged or movable, of the full size of the kier. The cover is made steam tight by special packing fitted to grooves and fastened by quick acting wheel nuts. The legs are made of such length as to give any desired distance below the kier, keeping the bottom head from the floor, thus preventing corrosion. A safety valve, steam gauge, and wrench for cover are furnished with each kier.

By using a closed kier the bleach house is kept free from steam and damage to roof and building as well

as other disagreeable features are avoided.

The list of users of the Allen improved kier comprises almost a directory of the larger bleaching establishments in the country, some of which are using as many as 14 or 15 kiers, covering five and six repeat orders. Among their later orders have been a number from knit goods bleachers and knitting mills operating their own bleacheries.

They make special sizes for small production.

Besides their bleaching kiers, they also build an improved steam box for worsted and cotton yarns, print goods, etc., of which many are in use, the Dean patent and Manning upright boiler, smoke stacks and all kinds of heavy plate iron work.

Dyeing Aniline Black.*

K. OEHLER, OFFENBACH, O M.

(Continued from November.)

The hanks should be turned after two hours: In place of the sticks it is advisable to use wooden laths about 1 1/4 inches square and about 10 feet in length, with the corners rounded off. They should be free of knots, well planed and smoothed with emery paper.

Before using, the laths should be wiped over with black mordant and dried.

About 4 1/2 lbs. of yarn are placed on one lath. To turn the yarn, each lath is turned by hand until the position of the hank has been reversed. In this way 100 lbs. of yarn should be turned by two men in not more than 8 to 10 minutes.

It has already been pointed out, that dyeing of aged black consists of two phases, the drying and the ageing, both taking place in the same room.

*This article is by the leading manufacturer of aniline salt in Europe, his annual production being about 4,000 tons. The American agents are Geisenheimer & Co., 189 Front St., New York.

Two hours after turning the yarn for the first time, it is given half a turn, which operation is repeated at intervals of two hours.

According to the action of the ager, the yarn will be dry in from 4 to 6 hours. The ageing proper follows now. Moist heat is required for this purpose. Steam is carefully allowed to pass into the ager. The dry bulb thermometer should register 94.5 deg. F., the wet bulb 86 deg. F. During this time the aniline black (emeraldine) is actually formed. Gases possessing a strong smell and consisting principally of hydrochloric acid and various oxides of chlorine are liberated.

The yarn is turned from time to time and it remains in the slowly ventilated ager until it appears of a blackish green color.

This may occupy from 6 to 8 hours or more.

It is now taken out of the ager and chromed in the following bath: For 100 lbs. of yarn, 200 gals water, 6 lbs. bichrome, 4 3/4 gills sulphuric acid.

The yarn is turned quickly for 10 to 15 minutes at a temperature of 166.5 to 176 deg. F. and is afterwards thoroughly rinsed in water. Finally it is soaped for 15 minutes at 176 deg. F. in a bath containing 3 lbs. of olive oil soap and 1 lb. of soda per 100 gals. of water, rinsed and dried.

The impregnating bath has been given for 50 lbs. of yarn.

In case about 200 lbs. of yarn have to be dyed at the time, care should be taken to impregnate the following three 50 lb. lots in rapid succession.

On account of the water contained in the first 50 lbs. of yarn, the bath will have been reduced in strength from 12 deg. Tw. to about 11 1/4 deg. Tw. and from 4 to 4 1/2 gals. of liquor will have been absorbed. This may be calculated by measuring the height of the liquor from the mark which has been previously made inside the vat.

It is essential that the concentration

of the solution remains constant during the impregnation of the successive lots.

In the case of 4 gals. of liquor having been absorbed (which would correspond to 1/25 of the 100 gals. originally employed) it will be necessary to add about 1/20 part of the ingredients used for the first bath, namely: 6 lbs. aniline salt, 4.4 oz. bluestone, 1 lb. 14 oz. sodium chlorate, 3.2 oz. ammonium chloride, 1 pint 3.7 gills aluminium acetate.

The various ingredients are dissolved in as little water as possible (about 2 gals.), added to the original bath, which, if too strong, should be reduced with water until it shows a strength of 12 deg. Tw. The marking in the vat will show whether the addition has been sufficient to bring the bath up to the original level. The following working method has been found out by experience: the aniline salt is dissolved in an equal weight of water. Stock solutions are prepared of bluestone, sodium chlorate and ammonium chloride. For each of these a separate measure, which holds the exact quantity required, is provided.

As soon as the first lot of yarn has been taken out and extracted, the aniline and after this the proper quantities of the other solutions, including the aluminium acetate, are added.

The second lot of yarn is entered after the strength of the liquor has been found correct by means of the Twaddle.

The old bath remains always fit for use, providing the work is carried on continuously.

In case a precipitate has been formed after the liquor has been kept for some time, filtering will be necessary. Yarn which has been impregnated with a turbid aniline solution will rub off slightly.

If the process is not carried on continuously, or if the aniline black is in its trial stage, the quantity of solution prepared should not exceed that required for one lot of yarn.

For this purpose it is recommended to proceed in the following manner:

Boil, rinse and dry the yarn. For 200 lbs. of yarn prepare about one-fourth part of the quantity of solution given before.

Stock Solution. 30 lbs. aniline salt K. Oehler, 1 lb. 6 oz. (688 gr.) bluestone, 9 lbs. 6.4 oz. sodium chlorate, 1 lb. (500 gr.) ammonium chloride, 1 gal. 6 1/2 gills aluminium acetate, 15 deg. Tw.

The whole is made up to 25 gals. (125 l.), strength, 12 deg. Tw. Two to 2 1/2 gals. of this solution are poured into an earthenware basin. About 2 lbs. of yarn are impregnated at one time. After each lot, a quantity of the stock solution is added. To ensure even impregnation the yarn is turned in the solution until it is properly wet out. It is now wrung three times and put aside. After treating the whole quantity in this manner, the operation is repeated and the yarn is now finally hydroextracted, stretched and aged, etc.

Remarks. All the appliances used for aniline black dyeing, such as trestles, benches, wringing pegs and vessels, must be made of wood. They should be used exclusively for this color.

Alkali or even water which comes in contact with fabrics impregnated with black mordant will produce whitish, respectively grayish stains.

The temperature given for the drying and especially for the ageing should on no account be exceeded. Too high a temperature will cause tendering of the fibres.

Direct daylight should be excluded from the ager.

The shade of the finished black depends upon the depth of the blackish green, produced in the ager. It is therefore advisable to impregnate in the morning, so as to enable shading in daylight. The intensity depends upon the amount of liquor absorbed by the yarn, so that a deeper black will be produced by using a liquor of 12 deg. Tw. or 13.5 deg. Tw. High counts require more mordant than

lower ones. Of the greatest importance is uniformity in everything, in the impregnation, the wringing or hydroextracting, in the drying and ageing.

Mercerized yarn requires a liquor from 20 to 25 per cent. weaker than the standard solution.

Stockings. Stockings and other hosiery are impregnated, stretched on forms and turned from time to time or they are treated in rotating wire gauze cylinders.

Loose Cotton. The treatment of loose cotton is similar to that of yarn. A stronger black mordant is however used, about 13.4 deg. Tw. Care should be taken to ensure thorough impregnation.

After impregnating, hydroextract and dry on hurdles. During the drying operation it is necessary to turn the cotton from time to time. When perfectly dry, steam is allowed to pass into the ager, to moisten the warm air and to complete the ageing.

Piece Goods. Pieces are padded at their full width three times in succession with a solution of 12 deg. Tw. The ageing is conducted in an apparatus constructed after the Preibisch system. The padded cloth passes over a system of rollers, through a heated chamber, which is provided with fans. It is dried in the first half of the apparatus and aged in the second half. The cloth leaves the apparatus after one to two hours, when it is of a dark green color. Finally the chroming follows as previously described.

The process employed for the dyeing of silk union is a similar one. The temperature in the ager should, however, be kept 9 deg. F. higher.

Aged Black in Calico Printing. The general instructions for dyeing black apply also to printing. Practically speaking the dyeing of aniline black is mainly an adaption of the printing process.

An insoluble copper salt, viz., copper sulphide or in place of this a minute quantity of vanadium, in the form of a chloride, is employed as oxygen carrier.

After the printing and drying, age.

For styles containing black only, it is advisable to age very slowly (at 30 to 35 deg. Hygrometer). A nicer black, absolutely fast to rubbing, is obtained by this method. In case other steam colors are present, it is necessary to age rapidly by passing the cloth through the Mather-Platt. After this pass through the ammonia box and ultimately into the proper steamer, for the purpose of fixing the other colors.

For heavy patterns the addition of a small quantity of ammonia (2 1/2 to 3 ozs. per 3 lbs. of aniline salt) is advisable.

This ought never to be omitted, if the goods are passed through the Mather-Platt.

The ammonia decomposes part of the aniline salt, aniline oil becoming free. It also counteracts the hydrochloric acid formed during the ageing (from 3 lbs. of aniline salt nearly 1 oz. of hydrochloric acid gas is liberated), and therefore prevents tendering of the fibres. The ammonium chloride which is formed, on account of its hygroscopic nature, acts favorably on the formation of the black.

(To be continued.)

—The number of different establishments engaged in the textile industries (except flax, hemp and jute) was, according to census of 1900, 4,170. The number has shown a decrease since 1870, when it was 4,790. This is because of the closing up of many small country custom mills (principally woolen mills) and consolidations. The value of the product has increased from 199 million in 1870 to 297 million in 1900.

—The average capital of the 973 cotton manufacturing establishments reported in 1900 census is about $473,000. The average capital of those engaged in the manufacture of wool is less than $220,000.

MILL NEWS.

Cotton.

New Mills.

*Canada, Hamilton. A new brick building, 150 by 50 feet, two stories high, is to be erected for the Dominion Cotton Belting Co., recently incorporated. American capitalists are interested in the new enterprise

*California, Stockton. Plans are being prepared by E. M. Frasier for the new buildings to be erected for the cotton mill. Will be 100 by 300 feet, one one story and the other four stories, brick. A separate building will be erected for the power house. About $300,000 will be invested in the enterprise.

*Canada, Hamilton. The Dominion Belting Company expects to begin operations in about three months in their new mill, upon which work of construction has begun. Company is incorporated with capital stock of $50,000. Stitched cotton belting will be made. J. M. Young, C. T. Grantham, H. H. Lehman and J. Spencer Turner are interested. Company's postoffice address is Box 152.

*Connecticut, New Haven. The Narrow Fabric Corporation, recently incorporated with capital stock of $50,000, will start work at once on construction of new building for purpose of manufacturing narrow elastic and non-elastic fabrics. Earl Smith is president of the company and Archer J. Smith, treasurer. Both are connected with the American Mills Co. of Waterbury.

*Georgia, Lindale. The walls of the new building under construction for the Massachusetts Cotton Mills, are up three stories and work of putting on roof started. The machinery has been ordered and will be installed as soon as the building has been completed.

*Indiana, Evansville. Contract has been let for erection of the Lincoln Cotton Mills. It is expected to have the buildings completed by the first of the year and the factory in operation by April 1st. The main building will be 408 by 129 feet, with boiler room 44 by 80 feet, and engine room 56 by 44 feet. Two large warehouses will also be built.

*Mississippi, Macon. Arrangements have been consummated for the cotton mill at this place. Adolph Suck, mill engineer and architect of Boston, has recently visited this place and accepted the proposition of the company to draw the plans and take charge of mill buildings. Work is expected to be started early in January or possibly February. The mill is to be of 10,000 spindles' capacity on standard sheetings.

*North Carolina, Burlington. J. Q. Gant & Sons expect to have their new mill completed by January.

North Carolina, Gastonia. B. G. Rhyne will be superintendent and manager of a small frame building which is under construction at this place. Twenty new 40 inch dobby looms will be installed, for making fine goods, the yarn and warps to be supplied by the Modena Mill. It is expected that operations will be started next month.

*New York, Hornellsville. The new plant for the Merrill Silk Company will soon be ready for occupancy. The machinery which has been purchased will give the plant a capacity of 500 dozen pairs of silk gloves, but company will not make that, however, at start.

*North Carolina, Bessemer City. J. M. Torrence, reported interested in organizing a company with capital stock of $300,000, to erect a fine cotton goods mill, has already secured a large portion of the requisite amount and it is hoped that work will start on construction in the spring. The plant will be drived by electricity and will manufacture madras and other fine goods.

North Carolina, Concord. A new plant known as the Magnolia Mills has been established here by J. M. Odell. A building has been secured and 48 looms will be installed at first, (plant has accommodations for 100). Fine goods will be made. Thomas J. Hatfield will be superintendent of the mill.

*North Carolina, Spray. Work is under way on construction of the Moorehead Cotton Mills, which will be equipped with about 4,000 spindles.

*Pennsylvania, Philadelphia. Richard J. Meehan is president and Alfred H. Mothes, vice-president, of the Meehan-Mothes Company, recently reported organized to operate the upholstery department of the E. H. Godshalk Company. They manufacture tapestry curtains, covers, piece goods, etc. Office and salesroom, 872 Broadway, N. Y.

Pennsylvania, Philadelphia. Contract has been awarded William Steele & Sons for erection of a mill building for the American Lace Company, on Glenwood Avenue, between Eighth and Ninth Streets. The building will be 500 by 66 feet, brick, four stories and basement, with power house, one story.

*South Carolina, Laurens. Fine sheetings will be made by the Watts Mills, which will start work on construction of the new plant about January. Plant will be equiped with 15,000 spindles (ring) and 400 looms, and employ about 300 people. Steam power will be used.

*South Carolina, McCormick. At a meeting held recently by those interested in the cotton mill projected, $35,000 was secured of the $50,000 necessary to start. B. Frank Mauldin will be president of the company which will be capitalized at $200,000, the balance to be taken by Northern capitalists.

*South Carolina, Ninety-six. Work has begun on foundations for new mill to be erected here.

*Tennessee, Chattanooga. J. H. Parham, Chattanooga, is president of the

Chattanooga Cotton Felt Co., capitalized at $10,000, and which recently started operations making cotton felt. R. B. Fothergill is treasurer and buyer for the company. They use electric power, operating garnett machines.

*Tennessee, Memphis. The Memphis Bag. Co. has started operations in a warehouse which has been leased, making burlap bags. This is a branch of the Jackson Fibre Co., under charge of R. J. Wood.

*Texas, Orange. The prospect of a cotton mill at this place is very favorable. Local and Houston capital are interested, as well as Boston parties, including Hon. J. W. Link, mayor of Orange; Judge A. M. Hatcher of Houston, Tex., and Adolph Suck, mill engineer and architect of Boston, Mass., who will draw the plans and have charge of construction, etc. It has not yet been decided how large the mill will be or just what kind of goods will be manufactured, but in all probability it will be a 20,000-spindle mill on standard sheetings.

*Virginia, Danville. Work is progressing on the buildings for the Dan River Power & Mfg. Co., which will equip each plant with 40,000 spindles.

*Virginia, Norfolk. The Margolius Cotton Mills Company has been incorporated with capital stock of $50,000, to operate the jute-bagging mill of Margolius & Co. R. Margolius is president of the company; J. Hirsch, vice-president; I. Margolius, secretary and treasurer, and D. Margolius, general manager. There are two buildings, each 170x100 feet. Machinery will be installed from plant formerly operated at Charlotte, N. C.

Virginia, Norfolk. The Norfolk Yarn Mills have been incorporated with capital stock of $40,000, privilege of increasing to $100,000. Barton Myers is president of the company; Robert M. Hughes, vice-president; C. Brooks Johnston, secretary, and F. M. Killam, treasurer. They have purchased buildings formerly operated as a knitting plant and will install modern equipment for manufacturing yarns. Samuel Stead, superintendent.

*Texas, Dallas. The machinery is being rapidly placed in position in the New Century Cotton Mills, in which J. E. Wiley has been actively interested. The boiler and engines have been placed, and some of the carding machines are ready to start. The spinning and other machinery has been received and is being set up. Operations will soon be started by colored help.

Enlargements and Improvements.

*Alabama, Huntsville. The Dallas Mills are placing the machinery in Mill No. 2 in position as soon as it is received and more than 400 looms are now in operation. They expect to have the entire equipment of the mill, 28,700 ring spindles and 790 looms in operation during early part of December.

*Georgia, Atlanta. The Gate City Cotton Mills, reported to install 5,000 additional spindles in the mill, expect to have the total equipment, 10,000 spindles, in operation by November 20th. Company makes hosiery yarns, 6 to 26s.

*Georgia, Barnesville. The Georgia Underwear Co., reported erecting a larger boiler and engine and dynamo for purpose of increasing capacity, will also add 3 new knitting machines. This concern makes ladies' cotton ribbed underwear.

*Georgia, Cedartown. The Standard Cotton Mills, previously reported to build a large addition to the plant, will install 2,000 mule spindles in same.

*Georgia, Columbus. Work has been started toward building the new mill for the Muscogee Mfg. Co. The new mill will be 177x105 feet, five stories high and will be equipped with modern up-to-date machinery.

Georgia, Gainesville. An additional building is to be built by the Pacolet Mfg. Co., to be used for a clothroom. The present room is to be equipped with looms.

*Georgia, Griffin. Work has been completed on the new addition to the Rushton Mills. The building is 100 by 75 feet, two stories. The first floor will be used for cloth room and the second for napping and spooling room.

Georgia, Hawkinsville. The Hawkinsville Cotton Mills will install sixty additional looms in the mill.

*Georgia, Lafayette. At meeting held by the Board of Directors of the Union Cotton Mills, it was decided to make the contemplated enlargement of the plant. They now operate 212 looms and will increase to 500, adding something like 10,000 spindles. The present building will be extended to accommodate the new machinery. The engine now in use will be replaced with a much larger one.

*Georgia, LaGrange. The Park Cotton Mills, reported incorporated with capital stock of $20,000, privilege of increasing to $200,000, have started work on erection of a new building, which they expect to have completed by April 1903. They will install a chain system dye plant in the new mill. The machinery of the Park Mills at Troup Factory will be removed here. Howard P. Parks is president and general manager of the concern.

*Georgia, Poulan. The Poulan Cottton Mills advise us that they will start production of 4 yard sheetings about February 1st. Company is capitalized at $100,000, with W. C. Vereen, president; J. G. McPhaul, treasurer, and G. H. Peckham, superintendent. Will operate 5,000 spindles and 160 looms.

Maryland, Bank. The Baldwin Manufacturing Co has started work on erection of a new mill, near Elkton. They have been operating in leased quarters.

Masachusetts, North Adams. An addition, 50 by 60 feet, is under construction for the Johnson-Dunbar Mills Co. The first floor will be utilized for preparing and beaming rooms, and the second, web drawing. They expect to have it completed in about six weeks.

Massachusetts, Thorndike. Sixteen new spinning frames have been recently installed in the No. 2 mill of the Thorndike Manufacturing Co.

*Massachusetts, Uxbridge. The Mumford River Tape Co. is installing 30 more bread machines in the plant.

New York, Patchogue. Contract has been let for the erection of a new building, 100 by 60 feet, two stories, for the Patchogue Lace Mills, for purpose of installing additional looms. They contemplate having work completed by middle of December.

*North Carolina, Durham. The Erwin Cotton Mills Co. advise us that they are adding but 56 looms to the plant at present, which is all they anticipate putting in at the present time. This will give them a total of 982 looms.

North Carolina, Lexington. The Nokomis Cotton Mills have recently installed a 250 h. p. engine in the mill. They now operate 12,500 spindles and 320 looms.

*North Carolina, Randleman. The Randleman Cotton Mills are installing the additional 2,500 spindles in the addition recently completed.

North Carolina, Spray. A new dyehouse has been completed for the Lily Mills. They have installed the latest improved machinery.

Pennsylvania, Chester. A new building, 180 by 30 feet, brick, is under construction for T. I. Birkin & Co., for a stock house. The greater part of the building now used for stock room will be added to the present finishing department.

Pennsylvania, Clifton Heights. An addition, 80 by 60 feet, three stories, is to be built by Nelson Kershaw, to be used for finishing Turkish towels. The old Tuscarora Mill, recently purchased by Mr. Kershaw, is also being remodeled, by addition of 30 feet and another story, increasing to three. A new boiler and engine room has also been started. Will also install 150 looms.

Pennsylvania, Trainer. The Trainer Spinning Co. has installed new picking machinery, revolving flat cards (40 inch) and combers in the mill.

*Pennsylvania, Philadelphia. Henry Schadewald, n. e. corner Third and Huntingdon Streets, has recently put in 38 looms for weaving hair cloth, seating and crinoline, in new addition built, and will add 137 more, when addition has been completed.

*Pennsylvania, Philadelphia. The Lehigh Mfg. Co. is receiving estimates for construction of new six-story brick building, 56 by 152 feet, which is to be built at 4th Street and Lehigh Avenue. This will be an addition to their storage building.

Rhode Island, Anthony. The Quidnick Company is having a cloth room built. The building is about 38 by 70 feet, one and one-half stories, wood, and has already been roofed.

Rhode Island, Providence. A new skein yarn dyeing plant is under construction for the Atlantic Mills. They are also building a new singe house, 150 by 80 feet, one story.

South Carolina, Anderson. The Orr Cotton Mills will start work about January, doubling the capacity of the plant. It has not yet been decided whether fine or coarse goods will be made. If fine goods they will add 30,000 more spindles, and if coarse, 25,000.

South Carolina, Columbia. Fifty additional looms have recently been installed in the Palmetto Mill.

*South Carolina, Greenville. The construction work on the Woodside Cotton Mills will be pushed to completion. Contracts have been placed for all the machinery.

South Carolina, Lando. A new two story building, 350 by 75 feet is to be built by the Manetta Mills. Also new boiler and engine houses.

*South Carolina, Spartansburg. The Saxon Mills will have a total of 25,088 ring spindles and 600 looms upon completion of installation of the additional machinery, which is being started up.

*South Carolina, Winnsboro. The Fairfield Cotton Mills expect to have the additions to the plant completed by January 1st. They will then have a complete equipment of 20,000 spindles and 500 looms. A new and larger engine will also be put in.

South Carolina, Yorkville. Contract has been let by the York Cotton Mills, for the erection of an addition, 80x57 feet, to the plant and will equip same for cone-winding. They now operate 13,264 spindles and 7,000 twister spindles on yarns.

Mills Starting Up

*Massachusetts, Spencer. Leavitt & Goldberg, operating a woolen mill at this place, have dissolved partnership. The business will be carried on as the Leavitt Woolen Co., by H. C. Leavitt and his two sons. Operations have been resumed after a shut down of two weeks, during which time numerous repairs have been made about the property.

New Hampshire, West Swanzey. The 5-set mill at this place, which has been shut down since last December, has been leased by W. H. Faunce, formerly of Camden, Me., and Norwich, Conn., and Mr. Ernest Maxfield, late superintendent of the Riverside Mills at Pittsfield, Me., who will form a company to be known as the Granite Woolen Co. They are now getting together their organization, and expect to start up within a few weeks on men's wear and dress goods. H. W. T. Malli & Co. will sell the goods.

*North Carolina, Greensboro. The Hucomuga Mills have restarted under management of C. N. Cone.

*South Carolina, Greenville. The Huguenot Mills will install 250 looms in the old Camperdown mill property which they purchased; not 200, as was reported.

*Texas, Hillsboro. The Hillsboro Cotton Mills have made the first shipment of cloth this month. They make a good quality of duck.

Mills Shutting Down.

Mississippi, Moorehead. Operations are reported to have been suspended in the Moorehead Cotton Mills, which were put in operation about a year ago. The failure of the local stockholders to pay up subscriptions in manner promised is attributed as the cause.

Woolen.

Kentucky, Louisville. Charles F. Murphy of 26 Chauncy Street, Boston, is interested in a new worsted mill which is to be established here. A mill, 200 by 80 feet, is to be built. Plans have already been prepared. Mr. Murphy is president and selling agent of the Hope Worsted Mills in Louisville.

*New York, West Eaton. Work has been completed on the foundations for the new woolen mill for the West Eaton Mfg. Co., replacing the plant destroyed by fire.

Ontario, Dundas. Alfred S. Parker of Toronto and A. M. Morrison have formed a partnership and will conduct a plant for rag grinding and waste pulling. A new picker, rag grinder and garnett machine are being placed in position.

*Pennsylvania, Chester. The Chester Worsted Company has been incorporated with capital stock of $100,000, to operate the old Campbell property, recently purchased by W. T. Galey. New concern has leased the property. Joseph Messick, J. W. Turner and W. Seymour Runk, are interested. They will operate eighteen spinning frames.

Georgia, Atlanta. The Southern Rug and Carpet Mills, which were incorporated last January and purchased the plant of the Atlanta Rug Mills, from the receiver, will increase materially next year.

Indiana, Mishawaka. The Mishawaka Woolen Mfg. Co. will erect a new building, 200x70 feet, five stories high, on property acquired. Three houses now on the site will be torn down. New building will be used mainly for storage purposes.

Massachusetts, Hyde Park. T. H. Gray & Co., expect to have their new addition to the carbonizing plant in operation by Dec. 1st. The capacity of the plant, when addition has been completed, will be 8,000 lbs. finished goods and 12,000 lbs. carbonized stock per day.

Massachusetts, Lowell. A small annex is being built for the Park Worsted Mill.

*Massachusetts, Newton. The Saxony Worsted Mills, reported some time ago to add more spindles to the equipment in the mill, have completed installation of 10,000.

Massachusetts, Pittsfield. The Russell Mfg. Co. has added two new spinning machines to the spinning room.

Massachusetts, Pittsfield. A large addition is being built to the J. W. Helliwell Mfg. Co.'s mill, which will be used for carding and spinning. A new office and other repairs are also being made to the plant. The machinery, which was removed to mills at Canton, is being replaced with new, for making waterproof and mackintosh fabrics. It is understood that parties connected with the Marston Worsted Co., of Skowhegan, Maine, are now interested in the Helliwell Co. Mr. Gledhill has recently been here.

Massachusetts, Saugus. Three new looms have recently been installed in T. Scott & Sons' woolen mill.

Massachusetts, Uxbridge. A new picker house, 40 by 60 feet, is under construction for the Royal Woolen Company.

New Jersey, Passaic. A large addition is to be built in the spring by the Dundee Textile Co., for purpose of increasing the capacity of their plant.

*New Jersey, Trenton. About $125,000 will be expended by F. A. Straus & Co. on additions to the worsted mill here. A new engine and boiler house has been built. They will add six combs, four worsted cards and 3,000 spindles. Use the Bradford system.

New York, Albany. Various improvements are to be made to William Barnet's shoddy mill. Has not yet fully decided whether to install electrical power to run entire mill or new boilers. Additional pickers and cards will also be put in.

Pennsylvania, Clifton Heights. A new addition is under construction to E. Hey & Company's dye house. They are also building a new sulphur house. (P. O. address is Addingham.)

Pennsylvania, Clifton Heights. Work has been started on foundations for an addition to the Runnymede Worsted Mills, by the Thomas Kent Mfg. Co. The new building will be 200 by 62 feet, two stories. A 55 Killowat dynamo engine, for generating light for the plant, is also being erected.

Pennsylvania, Philadelphia. Plans have been prepared for the erection of a third-story addition, 154 by 53 feet, for Albert Herbst & Co., and a separate building, 75 by 65 feet, two and one-half stories.

Texas, Waco. The Slayden-Kirksey Woolen Mills are to instal two 125 h. p. Heine tubular boilers.

West Virginia, Charleston. The Kanawha Woolen Mills are installing additional looms in the mill.

Mills Starting Up.

Kentucky, Louisville. It is reported that Frank Von Borries, proprietor of the Hamilton Woolen Mills, which have been operated on all kinds of shoddy for more than a year, contemplates starting up the weaving department, making dress goods.

*Maine, Oakland. Work has been started in the spinning room of the Oakland Woolen Mill, although the wheel has not yet been placed in position.

*Massachusetts, Franklin. Operations have been resumed by the Singleton Worsted Co., whose plant was closed during removal to the new dyehouse.

*Massachusetts, North Oxford. Weise & Nichols have started operations.

New Hampshire, Rochester. Charles E. Clark, of the Rochester Woolen Co., which purchased and operates the upper mill of the Norway Plains Mills, has recently secured the lower mill and will run same in connection with the present plant. The mill will be overhauled, remodelled and equipped with new machinery. It is expected to have it ready to start production about the first of May.

*Pennsylvania, Darby. Edwin Whiteley is general manager of the Griswold Worsted Mills, Limited, recently organized to operate the plant of the Griswold Worsted Mills. Operations will probably be resumed in two weeks, manufacturing worsted yarns, for the present.

*Rhode Island, Providence. The Standard Worsted Mills, a company recently formed by O. T. Inman, F. J. Bailey and Walter Slade, has succeeded to business of the Puritan Worsted Company, reported failed early last month. The companies' accounts have been about settled by George Legg, through a division of the assets, amounting to about 25 cents on the dollar. The new concern will operate the 20 looms in the mill on men's wear and fancy suitings, with Walter Slade as superintendent.

Knit.

New Mills.

*Indiana, Marion. Dr. H. Coran is president of the New York Commission Co., reported incorporated with capital stock of $35,000 to operate a knitting mill operating 160 knitting and 40 sewing machines and 230 ribbers. Will sell direct. Employ 140.

New Jersey, Bayonne. The Bayonne Knitting Mills, owned by L. E. McConnell & Co., 56 Worth Street, New York City, and superintended by R. M. Evans, are equipped with 14 knitting machines. Men's, boys' and children's sweaters are made. Electric power is used. Goods are sold direct.

*New Jersey, Camden. The Quaker City Hosiery Mills, previously reported incorporated, with capital stock of $100,000, will be located in the Hollingshead Building, Ninth and Market Streets, Camden, and not Philadelphia. They will make women's and children's fancy seamless hosiery, cotton in lace and fashioned, operating 60 knittting machines and 13 sewing machines. Samuel C. Gill is president of the company, and J. F. Bard, agent. Goods to be sold by Dresser & Co. Will use electricity.

New Jersey, Hammonton. The building formerly occupied by the Hammonton Knitting Co., out of business for some years, is to be taken by the Newville Knitting Co. as a branch mill. They expect to start operations in about two weeks, giving employment to 150 people. This company was recently reported as considering Waynesboro as a likely location.

New Jersey, Hoboken. The Applique Hosiery Co. will start operations about Nov. 10th., at 115 Court Street, making fancy hosiery. Robert Baird is president of the company, which is capitalized at $25,000 and B. J. Harder, treasurer and superintendent. Electric power will be used.

New York, St. Johnsville. The Whitney Piano Case Co. property at this place has been purchased by H. K. Salisbury, formerly knit goods manufacturer at Amsterdam, and will remodel same for knitting purposes. Operations are expected to start in about six weeks, using electricity for motive power.

*New York, Utica. The Avalon Knitting Company, manufacturing underwear, has transferred the machinery in the annex to their new mill, recently completed, in which they will start operations with about 100 people. They expect to move the entire plant to the new building about the middle of November.

*North Carolina, Kernersville. The new knitting plant to be established by Mrs. J. W. Beard and Sons, will be operated as the Kernersville Hosiery Mills, starting about December 1st. The building and power has been completed and knitting machinery ordered.

Pennsylvania, Kutztown. The King Knitting Mill, H. K. Deisher, proprietor, is to be enlarged by an addition, now under construction.

*Pennsylvania, Mechanicsburg. Samuel A. Suter is president of the Black Rock Knitting Co., recently reported to operate a mill at this place and connected with the Blue Ridge Knitting Co., at Hagerstown, Md. S. H. Weihenmayer is secretary and treasurer of the new company.

Pennsylvania, Norristown. Operations will be startted November 1st, by the Franklin Knitting Mills, Roop & Baker Co., proprietors, manufacturing men's, ladies' and misses' hosiery. The plant is equipped with 40 knitting and 2 sewing machines. Charles L. Baker is treasurer of the concern; C. E. Peeling, superintendent, and Frank Roop, buyer. Watson, Porter, Giles & Co. will sell the goods. Steam power will be used.

*Pennsylvania, Philadelphia. The Roxford Knitting Co., which is erecting a new mill, expects to have same ready for occupancy about January 1st. The main building is 200x60 feet, six stories high, with dye-house and boiler house separate. The building will be equipped with modern improvements in machinery, electric lighting, etc.

Enlargements and Improvements.

Maine, Bangor. The Berlin Knitting Co. has leased another building at 70 Exchange Street and will occupy both, owing to large increase in business. They manufacture worsted underwear and sweaters, making a specialty of heavy wear for lumbermen.

Massachusetts, Wakefield. Another addition, 80 by 67 feet, three stories, is to be built for the Harvard Knitting Mills.

New Hampshire, Nashua. The Hitchcock & Curtis Company, of Hartford, Conn., has purchased the knitting plant operated by Mrs. Lucy R. Baker. The buildings are in good shape and contain more or less machinery, which has been in operation up to the present time. It

is quite probable that they will install some latest improved machinery.

*Nova Scotia, Truro. The Truro Knitting Mills Co., Ltd., will start work about April on the erection of an additional building, which they contemplate having completed August 1st. Concern manufactures knitted underwear.

Ohio, Cincinnati. The Fairmount Woolen Mills, Adler & Co., proprietors, which have recently installed 42 knitting machines, hosiery dryer, Barker rubs, Balling machines and Apperly feeds in the plant, contemplate installing more machinery in the near future. Company makes underwear and ladies' and men's wool and merino hosiery.

Pennsylvania, Philadelphia. The Lee Hosiery Mills, Geo. B. Pfingst, proprietor, 3d and Cumberland Streets, will start work about December 1st on the erection of a new four-story building, 200 by 55 feet, and power house, 77 by 30 feet. Concern manufactures men's full fashioned cotton and worsted half hose. New mill will contain 143 heads.

Pennsylvania, Pottstown. Owing to poor health of Mr. Krause, of Fritz & Krause, manufacturers of cotton and lisle hosiery, the firm will be dissolved. It is reported that the Pottstown Knitting Company, will purchase the plant and make enlargements and improvements to it.

*Tennessee, Athens. Some additional machinery has been installed in the Athens Hosiery Mills.

*Virginia, Berkeley. Work has been completed on the addition for the Berkley Knitting Mills, to be used for packing room and finishing. Ten new knitting machines have been added, increasing the daily production to 600 dozen. They will soon start work on an addition for drying and bleaching.

Wisconsin, Menekaunee. S. Hermanson, manufacturer of woolen knit goods, has purchased property at Menominee, where the plant will be removed as soon as arrangements are completed.

*Wisconsin, Ripon. The Racine Knitting Co., which has purchased the plant of the Ripon Underwear Co., will operate the mill in connection with their underwear mill at Stevens Point, making medium and high grade cut and fashioned underwear. Mr. C. W. Hayes will manage the underwear business for the company. The machinery in the Ripon Mill has been increased to 30 knitting machines and 22 sewing machines.

Mills Starting Up.

*Massachusetts, Newton Lower Falls. The Wellesley Knitting Mills have been organized with capital stock of $50,000 (Paid in) to operate the plant of the Dudley Mills, reported assigned last August. James Buchan, formerly agent for the Dudley Mills, is the principal mover in the new concern. The plant has been purchased and will soon be put in operation making same class of goods, to be sold through the Howland Department of James Talcott.

*New York, Cohoes. Isaac Roff, Troy, N. Y., has taken possession of the Atlantic Knitting Mill and started operations. This mill is now running with 9 sets cards, 40 knitting machines and 90 sewing machines, on cotton and wool underwear.

*Pennsylvania, Allentown. The new mill for the Novelty Hosiery Co. has been completed and operations started in same. Company makes men's fancy half hose in jacquard patterns.

*Pennsylvania, Reading. The Active Knitting Mills, Smith, Scarlett & Co., will start operations Nov. 3rd., making ladies' hosiery. S. S. Ruth is superintendent of the mill, which is equipped with 24 knitting and 3 sewing machines.

Mills Shutting Down.

*New York, Fort Plain. The Fort Plain Hosiery Co., which began operations last July, making men's hosiery, has discontinued operations. The plant is offered for sale. This is the mill in which Messrs. Schoen and Abeel were interested.

Silk.

New Mills.

*Maryland, Cumberland. Ground has been broken for the erection of the new silk mill for the Klots Throwing Company. The building will be 230 by 80 feet. They have been conducting an instruction school here for some months.

*New Jersey, Paterson. Samuel Bentley is president and superintendent of the Victory Silk Co., recently incorporated with capital stock of $50,000, and Thomas W. Bentley, treasurer, agent and buyer. The mill, which will be located at Paterson, N. J., will have an equipment of 50 looms.

New York, Binghamton. F. C. Kelly, secretary of the Board of Trade, has been actively interested in securing the establishment of a silk mill here. The new concern will be known as the Binghamton Silk Company. They will furnish employment for about 50 people at start.

*New York, West New Brighton. It is expected that the new mill under construction for A. K. Buhl, will be ready for occupancy about Dec. 15th.

Pennsylvania, Lancaster. Stelhi & Co., operating a large silk mill at this place, will build another large mill. C. Emlen Urban will prepare the plans for building upon which they expect to start work of construction before December 1st. This mill will be equipped with nearly 1,000 looms

*Pennsylvania, Mauch Chunk. The Mauch Chunk Silk Company, Ltd., has been incorporated for operating a silk mill at this place. The old wire mill property has been purchased and arrangements have already been made for making necessary repairs and alterations. Machinery has been purchased and operations will be started as soon as possible, possibly by the first of the year. Charles Neast is president of the concern; Ellwood M. Kuntz, treasurer, and

John Kidd (formerly with the Ernest Mill, East Mauch Chunk), general manager and superintendent.

Pennsylvania, Scranton. The Morrison Silk Company has been recently organized by local capitalists for weaving silks. Charles DuPont Breck is president of the company; T. Cramer Von Storch, vice-president; Ezra H. Connell, treasurer; Geo. H. Rice, secretary, and A. R. Morrison, general manager. A large brick building has been purchased and alterations will be made. The machinery has been ordered and the company expects to have the plant ready for operation by January 1st. A fine quality of wide silks will be made. About 150 people will be employed at the start.

Pennsylvania, Tobyhanna. Crane Bros., formerly at Montville, Conn., are establishing a throwing plant in building formerly occupied by the Standard Silk Co. It is expected that the mill will be in operation early in December, as most of the machinery has been placed.

Miscellaneous.

*New York, Binghamton. The Binghamton Fabric Printing Company, recently incorporated with capital stock of $25,000, O. S. Heller, president; R. B. Lockwood, treasurer, and Bethel Ware, manager, contemplates starting operations about December 1st, printing on all kinds of fabrics. They will sell direct and use steam power.

*South Carolina, Greenville. The Union Bleaching & Finishing Co., capitalized at $200,000 expects to have their new plant completed by next April. James B. Duggan is president of the concern; B. N. Duke, (New York and Durham), vice-president; and R. B. Arrington, (New York), secretary and treasurer. The orders for most of this equipment have been placed.

Enlargements and Improvements.

Connecticut, Windham. The Windham Silk Company is to install twenty more looms in the mill.

New York, Oneonta. The Paragon Silk Company will install ten additional looms (ordered) in the mill. They contemplate making other extensive improvements.

*Pennsylvania, Easton. Another large building, brick, four stories, is under construction for the Phillipsburg Silk Mill Co.

Pennsylvania, Philadelphia. Stead, Miller & Co., manufacturing upholstery goods, contemplate erecting an addition, 80 by 24 feet, two stories, and one 174 by 33 feet, one story.

Pennsylvania, Sunbury. Plans are being prepared for a new mill to be erected by the Susquehanna Silk Mills, at cost of about $200,000. The new building is to be 300 by 300 feet, one story, with sawtooth roof. A new power house and storehouse will also be built.

*Pennsylvania, Swarthmore. Work is nearing completion on the addition to the Victoria Plush Mills. The looms are expected shortly and will be put in position in about two weeks.

*Pennsylvania, Taylor. The Davis Silk Company is making an enlargement to the Loubinac Silk Mill, which they will operate. Mr. Charles Davis will be superntendent of the plant, which will be ready for starting operations in a short time.

Pennsylvania, Weissport. A. L. Storms & Co., who recently purchased some additional silk machinery at Titusville, are placing same in their mill, capacity of which will be greatly increased.

Mills Starting Up.

*Rhode Island, Pawtucket. The Stewart Manufacturing Co., reported last July to start up a plant for manufacturing, chiffon for millinery, veiling and dress goods purposes, has started operations. The plant is equipped with 40 looms.

Miscellaneous.

New Mills.

*Connecticut, Jewett City. The Jewett City Textile Novelty Co., recently reported organized with capital stock of $50,000, has been exempted from taxation for a period of ten years. The new buildings are under construction and the plant will soon be ready to start up.

*Massachusetts, Attleboro. Work has been started on rebuilding R. Wolfenden and Sons' mill, recently destroyed by fire. A building, 184 by 40 ft. will be built for dyeing department; 40 by 80 ft. for spooling and carding room and packing and stock rooms, forming a complete square. They expect to have the dyeing department ready to resume operations in about three weeks.

New York, Long Island, Glendale. A large plant is under construction for the American Grass Twine Co., for manufacturing various products. They will install the latest improved looms for making matting out of grass. They expect to have the new mill in operation next spring, employing about 1300 people.

Pennsylvania, Philadelphia. Mathews & Pilgrim have recently started operations at 321 Chestnut Street, coning, reeling and spooling yarns.

*Rhode Island, Niantic. The town has exempted the mill property recently purchased by James E. Pike, from taxation, for a period of 10 years, provided operations are begun within four months. Mr. Pike was formerly agent and superintendent of the Sterling Dyeing & Finishing Co., Sterling, Conn., before the plant passed into the hands of the U. S. Finishing Co. There is a fine water power, stone mill and other buildings, all of which will be put in repair and equipped with modern machinery for conducting a dyeing, bleaching and finishing business.

Enlargements and Improvements.

*Massachusetts, Fall River. Contract has been awarded to Beattie & Wilcox, for the new building to be built for the Algonquin Printing Co. The main build-

ing will be 254 by 104 feet, three stories, with an ell, 40 by 90 feet, for boiler and engine house, brick. Two of the company's present buildings will be removed to site on land near the N. Y., N. H. & H. R. R. tracks. A chimney, 175 feet high, will also be built. They expect to have the new buildings ready for making summer and fall fabrics.

Massachusetts, Millis. The National Flax Fibre Mills are reported in active operation and that new machinery is being installed.

*Pennsylvania, Allentown. Work is well under way on additions for Lotte Bros., operating a silk dyehouse. The walls are up for the two-story addition west of the main building, and new addition is partly under roof. A filter plant will also be put in by the company, with capacity of 1,000,000 gallons per day.

Pennsylvania, Philadelphia. An addition is to be built by John T. Bailey & Co., manufacturers of jute, S. Water and Tasker Streets. The building will be 310 by 55 feet, two stories. They have purchased the machinery of the California Jute Mill, San Francisco, and will remove it to this place. They propose making a full line of flax, hemp and jute twines, carpet and rug yarn and rope.

West Virginia, Wheeling. Extensive repairs and a general overhauling are under way at J. L. Stifel & Sons' print works, during shut down. Operations will be resumed soon.

Pennsylvania, Reading. A new plant is under construction for the Liberty Dye Works, Elias Schulze & Son, for warp dyeing. New machinery is being installed in the works.

Fires.

New Hampshire, Ashuelot. The main building of the Ashuelot Woolen Company's property has been destroyed by fire. Loss is estimated at about $11,000; insurance of about $4,500. This mill was formerly known as Mill No. 2 of the Edward C. Thayer property. The mill was being operated to its full capacity, 25 looms, on cotton warp beavers.

New York, Depew. The entire plant of Depew Knitting Mills was destroyed by fire recently. It was in temporary quarters. The loss is estimated at about $60,000, about half covered by insurance. The company's new buildings are expected to be ready for operation about the middle of January.

Pennsylvania, Williamstown. The underwear mill, operated by Hoffman & Shelton, has been destroyed by fire. The loss is placed at $40,000, with insurance of less than $30,000. Have not yet decided definitely as to rebuilding the plant.

South Carolina, Chester. The dye house and engine room of the Springstein Mills has been destroyed by fire. The loss is estimated between $50,000 and $75,000. Work will start at once on rebuilding and it is thought that the mill will be running in full again by January 1st.

Failures and Suspensions.

North Corolina, Henderson. The Seaboard Knitting Mills have been placed in the hands of a receiver, viz:—A. C. Zollecoffer, and will be sold at auction, December 10th. Operations have been discontinued in the mill.

Facts and Gossip.

Alabama, Birmingham. The Birmingham Hosiery Mills have made an assignment to Culpepper Exum and J. A. Yates. Lack of operating capital is said to be the cause. The plant is advertised for sale.

*Arkansas, Monticello. The project of the Monticello Cotton Mills, which were to erect a new mill here, has not yet been carried through.

California, San Francisco. Manager Fleicher of the State Board of Trade, is corresponding with William Easdale, of Belfast, Ireland, who is considering establishing a plant at this place if present indications prove favorable. He is interested in a plant for making cotton, woolen and linen goods for local market, Central and South American trade and the Orient.

Connecticut, Jewett City. The Jewett City Textile Novelty Co. has been incorporated with capital stock of $50,000, to dye, bleach, print and finish fabrics. Archie McNichol, Jewett City, is president of the company; Dr. J. J. Donohue, Norwich, treasurer and Oliver P. Wattles, Norwich, secretary.

Connecticut, Montville. The firm of Chaffee & Crane, manufacturers of silk at Palmertown, has been dissolved, Mr. F. C. Crane, retiring.

Delaware, Wilmington. The Georgetown Hosiery Co., 13th and Lombard Streets, has been placed in the hands of a receiver, viz., The Equitable Guarantee & Trust Co.

Georgia, Augusta. It is reported that the Isaetta Mills property has been purchased by Amos K. Clarke for himself and others, and that the mill will be continued in manufacture of cotton.

*Georgia, Barnsville. The Gem Knitting Mills Company has been chartered with capital stock of $30,000, to operate the Hanson-Crawley Mill, recently taken out of the courts under order issued. J. P. Thurman, J. L. Kennedy, J. L. Fogg, J. T. Taylor and C. O. Summers are interested in the new company. Operations are expected to start in about a month.

*Georgia, Tennille. Application was made by the American Moistening Company asking that the upset price of the Tennille Cotton Mills, placed by the court in October at $75,000, be changed to $50,000. This was granted by Judge Speer. Property is to be disposed of at private sale, to be held at Macon on December 10th.

Kentucky, Mayfield. The Old Woolen Mills Co. has been incorporated by Henry S. Hale, W. S. Cook and G. O. Duncan, with capital stock of $100,000.

Illinois, Chicago. The American Silk Company has been incorporated with capital stock of $250,000 by William C. O'Neill, Edward B. Stevens and Chas. A. Stevens. They propose manufacturing and dealing in silk, woolen, cotton and linen fabrics.

Maine, West Kennebunk. The business of R. W. Lord & Co., manufacturers of yarns and twines, has been incorporated with a capital stock of $100,000, all paid in, and the business will be continued under the same management. Robert W. Lord, president; Hartley Lord, treasurer, both of Kennebunk, Maine.

*Massachusetts, Attleboro. Chas. F. Orr has started running his braiding plant (equipped with 200 braiding machines), five nights a week. Plant is equipped with electricity.

Massachusetts, Boston. The business of H. & G. W. Lord, 111 Commercial St., manufacturers of nets, seines and twine, has been incorporated as the H. & G. W. Lord Company, with a capital stock of $300,000, all paid in. George W. Lord, president; George B. Lord, treasurer.

*Massachusetts, Canton Junction. Machinery has begun to arrive for the Neponset Woolen Mfg. Co., which is to be established in the buildings formerly occupied by the Canton Bleachery Co.

Massachusetts, Otter River. The Templeton Mills, formerly operated with Henry V. Haile, treasurer, on yarns, have been purchased by J. M. Bennett.

Michigan, Port Huron. The Merchants' and Manufacturers' Association has received a proposition to furnish a building for a branch plant of the Detroit Knitting Works. E. C. Boice and Wm. Canham are interested.

*Missouri, Carthage. The Carthage Woolen Mill is being dismantled, some of the machinery to be shipped to Oregon and some to Canton, Ohio.

Missouri, St. Louis. Henry Spang, of the Ely & Walker Dry Goods Co., is reported as contemplating the establishment of a knitting mill in the South. Among the places addressed for site, is mentioned, Charleston, S. C.

*New Hampshire, Rochester. The Rochester Woolen Co. informs us that they do not expect to have the upper mill, recently purchased, ready to start until about Sept. '03, and not May, as was reported. It is to be entirely remodelled.

*New Jersey, Bridgeton. It is now stated by James G. Shaw that the East Lake Woolen Mills will not be rebuilt. Mr. Shaw is, however, interested in another concern, which he is endeavoring to establish here, to furnish employment for more people than the woolen mills.

New Jersey, West Hoboken. The Raw-Silk Assorting Company has been incorporated recently with capital stock of $100,000. Rudolph Streule, Hermon Simon, Louis A. Menegaux and A. Pcheibli are the incorporators. They propose sorting, examining and manufacturing all kinds of silks.

PERSONAL RECORD.

Cotton.

Andrew Bray resigned recently as foreman dyer at the New England Thread Co., Pawtucket, R. I. The 52 employees of the dyeing and bleaching department, together with many of the employees of the thread department of the mills, paid a surprise visit to Mr. Bray at his home and presented him with a handsome couch and gold watch chain.

Ernest Bromley, designer at the Grinnell Mills, New Bedford, Mass., for the past four years, has taken a position as designer for the Cocheco Mfg. Co., Dover, N. H. Percy Bromley, recently designer for the Acushnet Mills, has become designer for the Grinnell Mills.

A. P. Aleon has connected himself with the firm of James H. McClellan & Co., dealers in dyestuffs and chemicals, 130 Pearl St., Boston, Mass., as traveling salesman, and will represent their interests hereafter.

W. N. Brown, agent of the Anderson Cotton Mill at Monticello, Ark., has resigned, to accept a similar place in Georgia.

J. W. Booth, for a number of years with the Arlington Mills, has engaged with the Lawrence Dye Works Co., Lawrence, Mass.

James Crossley has resigned as agent and superintendent of the Crystal Spring Bleachery Company, Fall River, Mass.

J. Eastwood, designer at the Pemberton Mills, Lawrence, for the past 20 years, has resigned, to take a similar position with the Nashua Manufacturing Company, Nashua, N. H.

E. Franklin, who has severed his connection with the Hamlet Textile Company, Woonsocket, R. I., to accept a position in New York, will take a trip to Cuba before entering on his new duties.

E. A. Franks, an experienced mill man, formerly of Laurens, S. C., is the superintendent of the new mill at Clinton, S. C., the Lydia Cotton Mill.

Jas. B. Greeley of Holyoke, Mass., has accepted a position in the New York Mills, N. Y., as overseer of carding.

B. F. Houston has resigned as superintendent of the Chronicle Cotton Mill, Belmont, N. C., and returned to his former home in Monroe. He is succeeded by George Howell.

Charles Hayes, formerly of Providence, R. I., is the assistant superintendent at the Skenandoa Cotton Mills in Utica, N. Y. John H. Dunn, who occupied this position, is now superintendent for the Tremont & Suffolk Mills, Lowell, Mass.

Aaron Handy has resigned as overseer of spinning in the No. 3 mill of the Manchaug Co., Manchaug, Mass.

Harry Holmes is the new overseer of spinning in the Atlantic Cotton Mills, Lawrence, Mass. He was formerly with the Washington Mills.

C. A. Horne, overseer of the No. 1 weave room of the Great Falls Manufacturing Co., Somersworth, N. H., and Frank Chase, second hand, have resigned. The former was presented with a pair of field glasses and the latter a gold watch as tokens of the esttem in which they are held.

G. A. Johnstone, who has been the manager of the affairs of the Danielsonville (Conn.) Cotton Company for several months, has been made agent. H. D. Martin, a Massachusetts man, who has recently been appointed superintendent of the mill, is a thoroughly practical manufacturer of cotton goods.

Joseph James, who has been master mechanic at the Pacific Mills, Lawrence, Mass., for the past 21 years, has severed his connection with the corporation.

J. T. Kersey, who recently resigned his position with the Pacolet Cotton Mills, Pacolet, S. C., has accepted the position of overseer of weaving with the Washington Mills, Fries, Va.

George H. Kidd, overseer of weaving at the Merchants Mfg. Co., Fall River, Mass., has resigned.

William Lathrop, who recently resigned as overseer of weaving for the Saratoga Victory Mfg. Co., Victory Mills, N. Y., is now overseer of the cloth room of the Androscoggin Mills, Lewiston, Me.

Samuel Moss has been engaged as overseer of the mule room at the Narragansett Mills, Fall River, Mass., in place of the late John Fisher.

J. Wheeler Mears, formerly of Jackson, Ga., is now superintendent of the Darlington, S. C., Manufacturing Company.

Will Roscoe Milliken, superintendent of the Nashua Mfg. Co., Nashua, N. H., is acting agent of the plant in place of the late Mr. Cadwell.

John Maloney has resigned as overseer of weaving at the mill of the Hope Webbing Company, Pawtucket, R. I.

R. C. Mays is overseer of weaving for the Hawkinsville (Ga.) Cotton Mills, and W. H. Pearce is overseer of carding and spinning.

B. Nuttall, formerly of Waxhaw, N. C., has been engaged as superintendent of the Bennettsville Manufacturing Company, Bennettsville, S. C.

W. S. Porter, formerly of Griffin, Ga., is the new overseer of weaving at the Eastern Mfg. Co.'s mill, Huntsville, Ala.

O. B. Parker, formerly superintendent for the United States Cotton Company, Central Falls, R. I., is the successor of Mr. Knight at the Quidnick (R. I.) Manufacturing Company, as superintendent.

Alfred Platt has resigned as overseer of carding at the New York Mills, New York Mills, N. Y., and accepted the position of overseer of carding for the Libbey & Dingley Co., Lewiston, Me.

H. A. Russell, formerly of the Franklinville Mfg. Co., Franklinville, N. C., succeeds the late J. A. Cole as secretary and treasurer of the Enterprise Manufacturing Company, Coleridge, N. C.

Joseph Ridley has succeeded Patrick Menna as overseer of carding for the Shove Mills, Fall River, Mass.

George Rusby, overseer of the weave room at the Wampanoag Mills, Fall River, Mass., has resigned, and his place has been taken by Henry Ormerod, formerly at the Richard Borden Mills. Overseer Sanford of the card room and Second Hand Edwards have both resigned, the latter being presented with a gold watch by his help. Mr. Sanford's place has been filled by Mr. Firth.

William Roberts, overseer of the cloth room at the Merchants Mfg. Co., Fall River, Mass., has resigned.

John F. Reardon, agent of the Falls Company, Norwich, Conn., has resigned, to assume the agency of the Millville Mfg. Co., Millville, N. J. W. G. Henderson, late agent of the Shetucket Company, takes Mr. Reardon's place at the Falls mill.

George A. Smith, formerly second hand of ring spinning at the Monohansett Mill of Putnam, Conn., is now at the Wm. A. Slater Mill of Jewett City, Conn. Edward Leonard of Wauregan is the new second hand of carding at the Wm. A. Slater Mill.

Adolph Suck, mill engineer and architect, 179 Summer St., Boston, Mass., is coming to the front as a textile mill engineer and architect. He was formerly with Lockwood, Greene & Co., where he received special training in textile mill work to supplement his education as a mechanical engineer and draughtsman. Besides his textile work, he has been very successful in designing special automatic machinery for automatic coal handling and for loading and unloading steamships. One of his latest designs, on which he has been busily engaged all summer, having been accepted by the new Morgan steamship combination. He has recently been on a Southern trip, with the idea of combining business and pleasure, and while there has completed arrangements with several Southern companies to undertake the plans and construction of new cotton mills which are mentioned elsewhere in our news columns, among them being Orange, Tex., and Macon, Miss.

Samuel Stead is to be the superintendent of the new Norfolk Yarn Mills, Norfolk, Va. He was formerly superintendent of the Wabash Mills, Philadelphia, Pa.

S. B. Sargent, who recently resigned as superintendent of the Fairfield Cotton Mills, Winnsboro, S. C., has accepted a similar position with the Royal Bag & Yarn Company, Charleston, S. C.

Andrew Smith is now overseer of beaming for the Barnaby Manufacturing Company, Fall River, Mass.

Patrick Sullivan, formerly with Mechanics Mills, Fall River, has become overseer of weaving for the Merchants Manufacturing Company, in the same city.

J. R. Sykes, overseer of beaming, quilling, slashing, etc., for the Barnaby Mfg. Co., Fall River, Mass., has resigned.

George A. Tobey, of Lonsdale, R. I., has accepted the position of boss carder in the Linwood Cotton Mill, Whitinsville, Mass.

Myron E. Tripp has resigned as master mechanic at the Bristol Mfg. Co., New Bedford, Mass., to accept a similar position with the New Bedford Cordage Company in the same city.

H. J. Thimback has been engaged as boss dyer by the Clearwater Bleachery & Mfg. Co., Clearwater, S. C.

W. E. Touchstone, for the past year superintendent of the Laurens Cotton Mill, Laurens, S. C., has resigned.

Charles E. Thomas, for some time the treasurer and agent of the Hamlet Textile Co., has tendered his resignation, and the same has been accepted. Pressure of business duties caused him to tender his resignation. Mr. Thomas will retain his position as the agent of the Forestdale Mfg. Co., Forestdale, R. I., and he will devote his entire time to the latter company's interests.

James E. Winn has left Somersworth, N. H., for Langdale, Ala., where he has secured the position of master mechanic in a cotton mill.

Woolen.

E. T. Avison, overseer of finishing at the George H. Gilbert Mfg. Co., Ware, Mass., has resigned.

Thomas Adams, formerly overseer of carding at the New Albany Woolen Mills Co., New Albany, Ind., in now overseer of carding and spinning at the Madisonville Woolen Mills Co., Madisonville, O.

Victor C. Ballan is in charge of carding at the Holliston (Mass.) Woolen Mill.

Stephen Burgess has resigned as assistant superintendent and designer at the Wickford Worsted Mill, Wickford, R. I.

Thomas Bland of Providence, R. I., has been engaged as spinner and twister at the Hopatcong Worsted Mills, Changewater, N. J.

Fred P. Chapman, agent and superintendent of the American Woolen Co., Franklin, Mass., has tendered his resignation to the company to take effect as soon as his successor is selected. Mr. Chapman retires to become actively engaged with Jacob Geb in the management of the business of the Franklin Yarn Co., recently incorporated, and which is at present successfully operating the plant formerly owned by A. D. Thayer and H. W. Taylor. Mr. Chapman entered the employ of the Ray Woolen Co., as paymaster, in 1887, and after serving in this capacity four years was promoted to the superintendency. Nearly four years ago the plant became the property of the American Woolen Co. and shortly afterward Mr. Chapman was appointed agent, still retaining the position of superintendent. Altogether Mr. Chapman has been engaged at the mill for the past fifteen years. The employees in the mill have always held him in high regard, and all wish him added success in his new field.

James Carter, who recently resigned as overseer of finishing at the Anchor Mills, Harrisville, R. I., is now filling a similar position at the mill of Simson & Kirkaldy, Woonsocket, R. I.

Thomas Coates has been apointed dresser tender at the Riverview Worsted Mills, Waterville, Me.

Frederick Collier is now employed as overseer of carding by Basch & Greenfield Co., Newark, N. J.

William P. Clevinger, overseer of finishing, has re-entered the employ of the Seneca Woolen Mills, Seneca Falls, N. Y.

John A. Currier of North Andover, Mass., has accepted the position of assistant superintendent of the Hinsdale Woolen Company, Hinsdale, N. H.

George Dunham of Lowell, Mass., is superintendent of the Madisonville Woolen Mill, Madisonville, Ohio, which has resumed operations after a temporary shutdown.

Edward Devine, boss finisher for the Conshohocken (Pa.) Woolen Mills, has resigned to enter the employ of the Anderson Mills, Skowhegan, Me., succeeding G. N. Biddles, who went to Potter Hill, R. I.

A. F. DeRyck has resigned as head designer for James Roy & Co., Watervliet, N. Y., after a continuous service of 16 years. He is succeeded by his son, George A. DeRycke.

E. F. Deverall is boss weaver for the National & Providence Worsted Mills, Providence, R. I., succeeding F. Fiedler, who resigned that position in order to accept a position with the Manton Mills, Manton, R. I.

Fred Dowling has been engaged as dresser tender by the Mt. Battie Mfg. Co., Camden, Me.

H. S. Ford, late secondhand for Frederick Faulkner, Stafford Springs, Conn., has become overseer of carding for J. J. & D. Ellis, of the same town.

J. C. Ferger has severed his connections with the Evansville (Ind.) Woolen Mfg. Co. He has gone to Alburquerque, N. M., to superintend the installation of machinery in a factory now being built, and will take charge of same after completion.

James S. Gilmore, late overseer of weaving for the Hodges Fibre Company, Indian Orchard, Mass., is now assistant superintendent for the Taconic Mills, Pittsfield, Mass.

Charles Greenwood has accepted the position of designer with the F. L. Sayles Company, Pascoag, R. I. He was lately at the Reliance Worsted Mills, Woonsocket, R. I. W. D. Hawkins has tkken his place at the Reliance Mills.

John Garvin has accepted the position of cloth examiner with the H. H. Hilliard Company, Buckland, Conn.

C. P. Gilman, for many years superintendent of the weave room at the Dexter Worsted Mills, has accepted a similar position with the new mill of the Chase Woolen Co., Waterville, Me. Charles Nutter, also of Dexter, will have charge of the finishing department at the new plant.

John Hartley of Lowell has taken charge of the finishing department for the Seneca Woolen Mills, Seneca Falls, N. Y.

Jacob Hary has resigned as superintendent of the Camden Woolen Mill, Camden, Me. Patrick Hardley of Lewiston will fill the position.

Robert Iredale has succeeded Albert Anely as overseer of dressing and weaving at the Marston Worsted Mill, Skowhegan, Me.

George R. McDougall, boss carder at the Verd Mont Mills, Ludlow, Vt., has resigned. The superintendent, Mr. Walch, also has resigned, and accepted the agency of the Franklin, Mass., mills, and the new superintendent is Robert McArthur. Mr. Burns, the boss spinner, has given his notice.

Everett Jones is the new boss dresser at the Kent Mfg. Co., Centreville, R. I.

E. A. Jones, formerly of Madisonville, Ohio, is now overseer of carding at the Northern Ohio Blanket Mills, Cleveland, Ohio.

Oscar Lundborn has accepted a position as overseer of the finishing department at the American Woolen Company's mill, Franklin, Mass. He was formerly finisher at the Singleton Mill.

J. E. Leach has been engaged as overseer of spinning at the Clinton Mills, Norwich, Conn.

George McCartney has accepted the position of finishing at the Anchor Mills, Harrisville, R. I., taking the position made vacant by the resignation of Joseph Carter.

Joseph Midgley has resigned as dyer for the Ashaway Woolen Co., Ashaway, R. I., to accept a similar position with the Rhode Island Worsted Co., Indian Orchard Village, Mass.

R. O'Donnell, employed as dyer by the Madison (Me.) Woolen Company, is to be overseer of dyeing for the Oakland (Me.) Woolen Company.

Charles Staples has resigned as superintendent of the Waverley Woolen Mill, Pittsfield, Me., having purchased a part interest in the mill at Niantic, Rhode Island. S. R. Haines, who has been the assistant superintendent of the Pioneer Mill, will succeed Mr. Staples as superintendent of the Waverley Woolen Mill. F. W. Briggs will be the new assistant superintendent of the Pioneer Mill, at Pittsfield.

James Scott, overseer of carding at the Georges River Mill, Warren, Me., has resigned.

Alexander Sansouveur, overseer of the burling department at the Saranc Mill, Blackstone, Mass., received an easy chair from the operatives on resigning recently.

Daniel Sutcliffe and Robert Elliott, formerly dyer and finisher, respectively, for the Sutton Mills, North Andover, Mass., have accepted similar positions with the Rochester Woolen Mills, Rochester, N. H.

N. J. Snow, overseer of weaving, has changed from Ashuelot, N. H., to Waterford, R. I.

O. L. Suenderhauf has been appointed superintendent of the addition which has been built to the plant of the Warren Woolen Company, Stafford Springs, Conn.

Edward R. Simmons of Hillsboro Bridge, N. H., has taken charge of carding and spinning nights in the Golden Rod Woolen Mills, Wales, Mass.

F. L. St George, overseer of spinning at the Verd Mont Mills, Ludlow, Vt., has taken charge of spinning at the Charles River Woolen Co., North Bellingham, Mass.

Harry Turdoff, overseer and night superintendent at the Goodall Worsted Co., Sanford, Me., has resigned and gone to Changewater, N. J., to take charge of a plant there. He worked about eight years and section man and overseer at Sanford.

A. B. Widdoes, superintendent of Rawitzer's Woolen Mill, Mystic, Conn., has resigned to become a designer for the Pawcatuk Woolen Co., Potter Hill, R. I.

Edward Weisner, late designer for the Springvale Manufacturing Company, Rockville, Conn., has become superintendent of the plant of W. H. Reddick & Co., Dalton, Mass.

Weise & Nichols, who are operating the mills formerly run by the Glen Woolen Company at North Oxford, Mass., have secured the following organization: A. F. Griffin, formerly of Ray Mills, Franklin, superintendent; Michael Gehagan, Bennington, Vt., foreman carding room; James Lynch, Woonsocket, R. I., foreman spinning room; James Shaughnessy, Oxford, boss dyer; Nathan Hakes, North Adams, master mechanic.

Knit.

Matthew Trumbull has resigned as superintendent for the Musgrove Knitting Company, Pittsfield, Mass., and taken a similar position in Hoosick Falls.

E. J. Ryland, foreman of the knitting room at the Royal Knitting Mill, Amsterdam, N. Y., has resigned, and George Wittenbeck has charge of that department for the present.

Thomas Renan, formerly with the Bennington (Vt.) Knitting Co., is in charge of the knitting machines of the Gordon Mesh Underwear Co., Matteawan, N. Y.

Harry Lutton, who has been foreman in one of the rooms in the H. E. Bradford & Co.'s mill, Bennington, Vt., has resigned and gone to Utica to work.

John Hamilton is filling the position of overseer of spinning for the New England Knitting Co., Winsted, Conn.

G. S. Hooper, president and general manager of the Hooper Knitting Company, Lowell, Mass., has resigned. W. A. Eastman, formerly of the Lowell Hosiery, has taken his place. Among other retirements from the working force of the company are those of M. C. Cuttle, superintendent, and Francis G. Cuttle, dyer.

S. S. Gould, who recently resigned as manager of the American Card Clothing Company's factory at Lowell, has been elected president of the Hooper Knitting Company, of that city.

E. H. Everett has been appointed superintendent of the Henderson Mfg. Co.'s mill at Hampton, Ga.

Thomas Doud has recently resigned as superintendent of the Piedmont Manufacturing Co., Portsmouth, Va., to take a similar position with the Maline Knitting Mills of Winston-Salem, N. C.

Max Beckert has resigned as fixer at the Olympian Knit Goods Co., New Hartland, N. Y., and has taken charge of the new knitting plant of the Crescent Company, New York City.

W. W. Buchanan of Franklin Falls, N. H., has not accepted the position of overseer of spinning and carding at Sulloway's Mills nights, as recently reported.

James L. Smith is the new superintendent of the Tilton Hosiery Mill at Tilton, N. H.

C. I. Zellers, who has been superintendent at I. W. Torry's mill, Shamokin, Pa., for the past two years, has resigned.

Deaths.

Capt. John H. Montgomery, president of the Pacolet Manufacturing Company, Gainesville, Ga., while inspecting some new work at the mill fell over some staging, a distance of sixteen feet, to the floor below. His skull was fractured and other injuries were sustained which resulted in his death. Captain Montgomery was one of the largest cotton mill owners in the South. Besides being president of both the Pacolet Mills and the Gainesville Cotton Mills, he was also at the head of the three Pacolet mills in South Carolina, and interested in various other cotton mills in the South. His home was in Spartanburg, S. C.

Cleveland Swift, superintendent for the Wright Manufacturing Company of Lawrence, Mass., died October 30th. He had been in poor health for some little time.

Edward B. Maltby of Boston died of paralysis at his home in that city recently. During the first years of his business career, Mr. Maltby was actively interested in mining operations in th West. His greatest success, however, was achieved in connection with the management of the Cohannet Mills of Taunton, Mass. He was interested in this enterprise from its inception, and as treasurer of the concern, he brought the mills to a position second to that of none other of their kind in this country. When these interests were absorbed by the N. E. Cotton Yarn Company, Mr. Maltby was made vice president of the latter combine. For a time Mr. Maltby was president of the Boston Electric Light Company, and at the time of his death was a director of the Edison Electric Illuminating Company and vice president of the Copper Range Consolidated Company, as well as a director in a number of other companies.

Benjamin Knower, senior partner of the commission house of Knower & Turnbull, New York, died early last month. His death was the result of an operation for cancer of the throat. The deceased was born in Syracuse and commenced business with the old firm of Hunt, Tillinghast & Co. He begun his business carrer in 1865 under the firm name of Knower & Platt, as commission merchants, sellers of the Watervliet shawls. Subsequently he went into buiness for himself for a number of years, and in 1875 formed a partnership with Howard D. Thomas of Philadelphia under the firm title of Knower, Thomas & Co. Later the firm was changed to Knower, Haines & Thomas, and following this came the firm of Knower, Haines & Cooley, and then Knower & Cooley. About ten years ago he retired from active business, becoming a special partner in the firm of Cooley, Turnbull & Co. Upon the retirement of Mr. Cooley, about a year ago, a new firm was formed under the syle of Knower & Turnbull, which is to be dissolved at the end of this year. He was a member of a number of New York clubs..

Henry William Fries, of the well known cotton mill manufacturing firm of F. & H. Fries, died in Salem, N. C., November 5, at the age of 77 years. He was connected with many of the principal business firms in Winston-Salem and in North Carolina generally, and was very highly esteemed. He leaves an estate valued at about one million dollars.

Col. Thomas J. Borden of Fall River, Mass., died November 21st in a Providence hospital as the result of an operation for apendicitis. He was born in Fall River, March 1st, 1832, and at the age of 16 entered the office of the Fall River Iron Works Company, of which his father, Col. Richard Borden, was treasurer. After one year he entered the Lawrence Scientific School at Harvard University, taking a two years' course in engineering and chemistry. In 1851 he returned to Fall River and re-entered the Fall River Iron Works, remaining for two years. He was then appointed agent and treasurer of the Bay State Print Works, a newly organized corporation, which, in the panic of 1875, was consolidated with the American Print Works. In February, 1860, he was appointed agent and treasurer of the Troy Cotton & Woolen manufactory, and his plans led to the enlargement of these mills, increasing their capacity fourfold. Upon organization of the Mechanic Mills in 1863, Col. Borden was chosen president and agent, and after serving eighteen months was elected treasurer and assumed management of the whole business. In 1871 he organized the Richard Borden Company, and was chosen treasurer, which position he held until 1876. He has been a director since its incorporation, and president since '74. From 1871 to 1876 Col. Borden had practical control of the Troy, Mechanic and Richard Borden Mills, the three corporations running a total of 137,776 spindles and 3228 looms. He was at one time agent, treasurer and director of the American Print Works, now known as the American Printing Company. He had been a director in the Metacomet Bank, Old Colony Railroad, Old Colony Steamship Company, Fall River Manufacturers' Mutual Insurance Company, Boston Manufacturers' Company, Worcester Mutual Insurance Company, State Mutual Fire Insurance Co. and What Cheer Fire Insurance Co., of Providence. He is survived by his wife and three daughters.

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*Pennsylvania, Shenandoah. J. J. Franey advises us that he is about to erect a combination plant for electric lighting, artificial ice and steam heating, with prospects of a silk mill attached (all under one roof) and to be operated with same power. He is now working on the plans and general features, in addition to doing the excavating, etc.

QUESTIONS AND ANSWERS

Under this head we undertake to answer, free of charge, to the best of our ability, any pertinent inquiry pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring, not for publication, but as an evidence of good faith.

For reply to questions that are not of general interest to readers of textile journals, such as those relating to the compositionof yarns, analysis of fabrics, etc., we will charge the enquirer with the cost of the investigation.

Ribbon Weaving.

Editor Textile World:

Are there any textile books treating exclusively of ribbons and narrow fabrics? Milton (290).

We do not know of any book in English treating of the manufacture of ribbons and narrow fabrics. In French there is Les Metiers a tisser le Ruban, price $3.00, and in German, Methodik der Bindungslehre, price $2.50, and Die Deutsche Webschule, 2 vols., price $7.50. The second named is profusely illustrated with color plates and weave drafts, and the last is probably the most elaborate and thorough treatise on weaving in any language. Any one of these should be of great value in the manufacture of any kind of textile goods.

Iron Yarn.

Editor Textile World:

Of what material is the yarn in the enclosed sample composed? It is called iron yarn. Cast Iron (299).

Iron yarn is ordinary cotton yarn polished and finished to give it a high lustre.

Directory of French Silk Mills.

Editor Textile World:

We use large quantities of satin and silk goods and would like to buy direct from the foreign manufacturers. Where can we secure a list of silk manufacturers in France? Manhattan (289).

There is a directory of the silk manufacturers and merchants in France, Agenda des Soies et Soieries. This work is very complete, giving the address of each firm and the line of goods handled or manufactured by them. The price of this directory is $2.50 and it may be secured at the office of the Textile World.

Cards and Combs.

Editor Textile World:

What is the comparative output between woolen cards and worsted combs? N. A. (288).

The census assumes that 2 1/2 sets of cards (presumably 48-inch cards) are equivalent to one comb in productive power. This is probably as near a general statement as could be arrived at.

Cement for Clearer Cloth.

Editor Textile World:

I would like to know how to make a paste or cement for fastening clearer cloth to iron. Hawkeye (287).

The following recipe is recommended by a practical cotton manufacturer: Cook carpenter's glue in the ordinary way and add commercial pitch until no more will dissolve. A little experimenting will give the proper consistency.

Editor Textile World:

Kindly tell me where I can get a book or circular giving a description of the French Alsacienne or Alsatian Comb. Bedford (286).

A description of European cotton combing machines can be found in a work entitled "Cotton Combing Machines," by Thomas Thornley. Price $3.00. This book treats chiefly of the Heilmann cotton comb. The other combs are described in supplementary chapters.

Tweeds.

Editor Textile World:

What is technically meant by the term "Tweeds?" Does it mean cloth of peculiar texture, and is it made in this country? Tweed (282).

"Tweeds" is a name much more generally used for men's wear fabrics in Great Britain and Canada rather than in this country. Originally it meant only a twilled woolen cassimere fabric, with regular 4-leaf twill, but it is now applied to almost any twilled goods resembling the original tweeds and is frequently used in a general sense to describe men's wear fabric with a rough finish for outing use.

Lease Value of Mill Plant.

Editor Textile World:

I am interested in the lease of a mill, of which I enclose description. The plant has been operated about two years, with good care. What would be the approximate valuation at the present time of the buildings and equipment, and what would be an average rental for the property?

Market (285).

The mill is located in the South, and from description seems to be a well balanced mill. The buildings are brick, single story, with an engine room, boiler room, picker room, pump house and a number of cottages, and 25 acres of land, well located on a railroad with side tracks. The plant contains in the neighborhood of 2,000 spindles and about 100 looms, and is equipped with electric light plant. Without inspecting the plant and machinery, it is largely a matter of guess work in making an appraisal. We should judge the cost of machinery, when new, about $20,000; belting, shafting, etc., $2,500, and the buildings, real estate and other equipment, about $27,500, making approximate cost of the plant about $50,000. The plant has been running for two years, and as a going concern conservatively should have charged off in the neighborhood of eight to ten per cent. for depreciation. In our opinion, a fair lease for such a property would be in the neighborhood of $4,000 to $5,000 per year. There are other things besides value of the property that enter into the question of lease of a plant and its value as a money earner, such as conditions in regard to labor, health, freight, etc. We are assuming that these conditions are favorable.

Spinners of Ramie Fibre.

Editor Textile World:

We do not find any spinners of ramie fibre in your Directory. We are under the impression that there are some in this country. Kindly advise, and give us the address of any.

Ramie (283).

We do not think there are any ramie yarn spinners in the United States. There used to be a concern in Fitchburg, but we were unable to get word from them when compiling our last edition of the Directory. On the Pacific Coast there is a concern called the Ringheim Ramie Mfg. Co., 14 Sansome St., San Francisco, Cal., which was considering this matter some months ago and endeavoring to get a supply of raw material. It is possible that some manufacturers of cotton or worsted yarn may spin some ramie fibre, and, if so, we should be glad to hear from them. Many experiments have been made and much money expended in this direction. So far as we are aware, it has not yet been attempted on a large scale commercially in this country, although there are in Europe several factories which appear to be meeting with success.

Grade of Cotton Yarn.

Editor Textile World:

Is cotton yarn graded according to the quality of the cotton? If no particular grade is specified when an order is given, what is it customary to deliver? I have understood that the grade of cotton yarn is based on middling upland cotton.

Oppossum (258).

Cotton yarn is not graded according to the grade of cotton used in its manufacture; such a standard is impossible because there is no way of verifying the grade of the cotton when manufactured into yarn.

Cotton yarns are rather indefinitely classified as made from Egyptian, Sea Island or American cotton. When yarn is ordered, reference is usually made either to a sample or to previous deliveries. Purchasers judge the yarn by its strength, evenness, twist, color, size and quality. If an order is given for yarn without reference to any sample or previous lot delivered, the buyer will be somewhat at the mercy of the seller.

The Use of Silicate of Soda.

Editor Textile World:

Is silicate of soda largely used in the manufacture of silk, and if so for what purpose?

Silicate (257).

Silicate of soda is used largely for weighting silk and to a much lesser extent in combination with hydrogen peroxide for bleaching Schappe and Tussah silks.

Maco Cotton.

Editor Textile World:

What is the meaning of the word "maco" as applied to cotton, and what is it derived from? Egyptian (260).

"Maco" is a term applied to cotton yarn and hosiery made from Egyptian cotton. It was derived from Maco bey, an extensive cotton planter in Egypt, whose name became so generally identified with the Egyptian cotton trade that it was applied to the articles made from Egyptian cotton.

Fancy Yarn.

Editor Textile World:

Please inform me how the enclosed sample of nubbed yarn is made.

Boucle (292).

In our next (January) issue of the Textile World will appear an article on the manufacture of fancy yarns including knotted, looped and balmoral effects.

Standard Sizes of Knit Goods and Hosiery.

Editor Textile World:

Where can I get a list of the standard sizes of hosiery and knit goods?

Waltham (277).

A list of such sizes will be found in the February, 1902, issue of the Textile World.

New Publications.

The Practical Wool and Half Wool Dyer; by Dr. E. A. Springer; Hilmar Klasing, Leipzig. Price, $1.00.

This work, which belongs to the series entitled Practical Industrial Library, published by Hilmar Klasing, is offered, not as an exhaustive treatise on dyeing, but rather as a practical hand book in which the manufacturer, dyer, student or technical expert can readily find information on questions likely to arise in dye house practice. The introduction contains a brief historical sketch and useful information about water in dyeing, dyestuffs and mordants, fastness of colors, hints on the construction and equipment of dyehouses and dyeing calculations. Following this are chapters on The Wool Fibre; Dye Stuffs and their Application to Wool; Dyeing Loose Wool; Top Dyeing; Yarn Dyeing; Dyeing Woolen Cloth; Dyeing Woolen Piece Goods; Dyeing Shoddy; Dyeing Half Wool Goods; Mercerizing Half Wool Goods.

Plain Facts as to the Trusts and Tariff; by George Bolen; The Macmillan Co., New York and London, 1902. Price, $1.50.

The object of this book is to present in plain language much information concerning trusts and the tariff which is now confined to special students of those questions. In other words, it seeks to state the problems in connection with the trusts and tariff in plain language that will be understood by the average man. Both sides are presented impartially and the opinions expressed by the author are accompanied by plain statements of his reasons for holding them. Part I. treats of the trusts; Part II. of the tariff.

Woolen and Worsted Finishing. American School of Correspondence, Chicago, Ill.

This is the first instruction paper issued by the above named school for woolen and worsted finishing. It contains a description of the various processes, receipts, questions for review, illustrations of machines, and fulling tables.

Converting English Pounds into American Dollars; The Fairbanks Company, 78 City Road, London, E. C. Price. 15 cents.

This is a pamphlet containing tables giving the equivalents of American currency in English money. The table begins with 1 cent and rises 1 cent at a time to $1 00; then by steps of 5 cents each to $20.00; by steps of $1.00 each to $100.00; then by $5.00 to $1,000; by $25.00 to $2,000; by $50.00 to $5,000.

The tables are so arranged as to permit of ready reference to any given amount, and will prove useful to all having occasion to use both English and American denominations of money.

Cotton Facts; by Alfred Shepperson, Cotton Exchange Bldg., New York.

The new edition of this valuable little book has just appeared. It contains the usual information, brought up to date. "Cotton Facts" is so well known as to need no repetition of its contents here. It is sufficient to say that if one wants information the statistics of cotton and the cotton trade he can generally find it in this little volume, which is to be found in the office of nearly every one connected with the cotton industry.

Greer's Practical Carder.

After January 1, 1903, the price of Greer's Practical Carder will be $1.00 instead of 50 cents, as at present. This work has met with a very favorable reception and proved to be a valuable handbook for both manufacturers and employees. The second edition is now in process of preparation; orders may be sent to the office of the Textile World.

New Color Cards.

Alizarine Blue C O R Powder. Farbenfabriken of Elberfeld Co., 40 Stone St., New York City.

Two samples of woolen cloth dyed with different blue proportions of Alizarine Blue C O R Powder.

Mordant Colors. Farbenfabriken of Elberfeld Co., 40 Stone St., New York City.

Sixty-three samples of wool showing a wide range of shades dyed with the mordant colors for which full directions are given.

Pyrol Bronze 3 G. C. Bischoff & Co., 88 Park Place, New York City.

This card shows three shades of yellow dyed with different percentages of Pyrol Bronze 3 G.

Anthracene Chrome Red A. Cassella Color Co., 182 Front St., New York City.

This card shows four samples of raw wool, woolen yarn and cloth dyed with Anthracene Chrome Red A.

Azo Merino Black B. Cassella Color Co., 182 Front St., New York City.

This shows six samples of woolen cloth dyed black with Azo Merino Black B and 6 B. Two of the samples are striped with white cotton and show the effects possible by the combination of wool and cotton in the same fabric with this color.

Diazo Rubine B. Farbenfabriken of Elberfeld Co., 40 Stone St., New York City.

Two samples of cotton piece goods dyed Bordeaux colors with Diazo Rubine B.

Alizarine Blue J R. Farbenfabriken of Elberfeld Co., 40 Stone St., New York City.

Two samples of woolen piece goods dyed blue with the above named dye.

Benzo Fast Pink 2 B L. Farbenfabriken of Elberfeld Co., 40 Stone St., New York City.

Four samples of cotton goods, three colored and one printed with formulas requiring Benzo Fast Pink 2 B L.

Business Literature.

"Saving the Boiler—and Money."

This is the title of a booklet by Dr. A. M. Kinkaid to advertise the International boiler compound. The preparation, it is claimed, is particularly valuable for textile mills, as it is said not to affect the dyes in any way. Some large sales, the company reports, have recently been made in southern districts. Dr. Kinkaid's booklet is mailed free on request by the International Boiler Compound Company, 48 Market Street, Chicago.

Cotton Movement and Fluctuations. Latham, Alexander & Co., Bankers and Commission Merchants, New York.

The twenty-ninth annual edition of this well known work has recently appeared and contains the usual information furnished in former editions, and brought down to date. It contains a history of American cotton, statistics regarding acreage, consumption, deliveries, differences, stocks, weather, etc. It is compiled with the usual care and will prove valuable to the textile industry. It is not issued for sale, but for private distribution among the friends and customers of the publishers.

Stack Protection. Joseph Dixon Crucible Co., Jersey City, N. J.

This is a folder in which attention is called to the efficiency of Dixon's Silica-Graphite Paint for protecting smoke stacks. It has been used for nearly forty years by the largest steamship, smelting and manufacturing companies in various parts of the world.

The Schmidt System of Utilizing Highly Superheated Steam. Providence Engineering Works, Providence, R. I.

This book describes the Schmidt system of using super-heated steam of which the Providence Engineering Works are the American licensees. We understand this system is giving excellent results and users in this country will be interested in hearing about it. The catalogue is illustrated and the descriptive matter is supplemented with statements of actual tests showing the merits of the Schmidt system.

Stoneware. Villeroy & Boch, Mettlach. H. W. Loewe, Agent, 66 Park Place, New York City.

We have received a copy of the descriptive catalogue of the above named firm containing illustrations of many beautifully decorated stoneware articles.

A Model New England Factory Town.

The December issue of the New England Magazine contains a very interesting article descriptive of Hopedale and Milford, Mass. The illustrations are particularly interesting on account of the views they give of the model houses occupied by the employees of the Draper Company. Many of these houses are owned by the company. The best architects have been employed and special attention has been paid to diversifying the exterior and departing as far as possible from the dreary row of uniform buildings which so often typify the manufacturing town. Hopedale and Milford, although only a mile apart, are separate towns, each having formerly been a part of the old historic town of Mendon. The rapid growth of business of the Draper Company in the past few years, through the wide introduction of the Northrup loom, has made Hopedale and Milford two of the most rapidly growing manufacturing communities in the state.

A New Commission House.

A new firm of woolen and worsted selling agents starts business December 1st, under the firm name of Brigham, Graham & Capers. They will have temporary offices in the Textile Building until February 1st, and after that will be located at 90, 92 and 94 Franklin St., New York.

—The Fairmount Woolen Mills, Cincinnati, O., who are making improvements to their plant and installing new knitting machinery, have put in a number of balling machines from the Torrance Manufacturing Co., Harrison, N. J.

The Underfeed Stoker Co.

The increase in the Eastern business of the Underfeed Stoker Company of America, whose main office is in Chicago, necessitates the enlargement of their offices in the Exchange Building in Boston, where Mr. E. E. Taylor, general sales agent, makes his headquarters. They are installing the system in a number of large textile plants. The Arnold Print Works have recently given a fourth order, the York Mills at Saco are equipping 1050 H. P. plant, Slater Mfg. Company at Pawtucket have put in a 750 H. P. equipment, and we understand that Capt. Manning of the Amoskeag Manufacturing Company is much pleased with the recent installation of these stokers in their boiler plant. It will be remembered that Mr. George C. Tewksbury, the manager for the New England territory, read a paper descriptive of the Jones underfeed stoker at the last meeting of the New England Cotton Manufacturers' Association, which aroused much interest, and especially at this time when the questions of fuel economy and smoke abatement are forcing themselves to the attention of all large power users.

—The Burt Manufacturing Company of Akron, Ohio, have equipped a number of mills of the American Sheet Steel Company with their Cross oil filters and Burt exhaust heads. The large, new plant of the Allis-Chalmers Company at West Allis, Wis., has also been equipped recently with the Cross filters.

The Barber Knotter, in England.

Another example of the American invasion of Europe is found in the following item from the Cotton Factory Times in which the writer refers to the readjustment of wages in English cotton mills, owing to the use of the Barber knotter, an American machine well known to our readers and of which Barber and Colman, 11 Pemberton Sq., Boston are the proprietors:

"A few weeks ago a meeting was held between the employers' and operatives' representatives in the manufacturing department respecting a claim made by the employers that some allowance should be made for what they termed labor-saving machinery, including what is known as the Barber Knotter. The question was adjourned for three months at least, so as to enable both sides to obtain a better idea of the full effect of these appliances. One would naturally think the question would have stopped there for the present, but we learn that certain employers have been making attempts to persuade their winders to accept a less rate of wages when using these machines. We do not think this is a fair way of doing business, because if certain operatives accept these reductions it will prejudice the question as a whole, and will be quoted against winders at other mills. The operatives generally are perfectly justified in declining to accept any reduction in their rates on account of labor-saving appliances, and we hope they will insist in the maintenance of this position at all costs. Employers who attempt to force individual or mill settlements on such important questions are acting contrary to the spirit of the agreements which exist for the guidance of both employers and operatives. Even if the employers referred to are not members of the Employer's Association, it is no reason why they should be allowed to make any change in prices."

No stronger proof of the merits of this little machine could be desired. It also shows the attitude of the textile unions in England towards any labor saving machinery.

Unique Mechanical Draft Plant for St. Louis Fair Use.

The mechanical draft feature of the Union Electric Light & Power Company's plant, which will be used for lighting the World's Fair grounds at St. Louis, will be of unusual interest to engineers. The plant is to be equipped with both forced and induced draft apparatus, which is unusual. A mechanical draft plant usually is either of the forced or induced draft type, but in this case both will be used. There will be 26 boilers of 700 H. P. each, and will be equipped with automatic stokers. Fans will be used for the forced draft, and the boilers will also be operated under induced draft. The forced draft fans will be four in number, of the full housing type, size 160 in. They will be driven by 10 by 10 vertical engines direct attached. The induced draft fans will be two in number, of a size quite in keeping with the basis upon which the Exposition is being built, the wheel diameters being so large as to be seldom met with in mechanical draft engineering. Each of these induced draft fans will be of the full housing type, size 230 in., and will be driven by 9 by 10 double cylinder, double acting upright engines, this type being selected to secure the maximum power in limited space. The Buffalo Forge Company is building all the fans and engines for the above equipment.

National Association of Woolen and Worsted Overseers.

The 20th annual convention of the N. A. W. W. O. was held at the American House, Boston, Mass., Wednesday, November 19, about seventy members being present.

The meeting was called to order by President C. M. Hurst of Providence, R. I. After the reports of the secretary and treasurer had been read and accepted, fifteen active members and two honorary members were taken into the organization.

At the election of officers, President Hurst, Secretary Pickford and Treasurer Jones were unanimously chosen to succeed themselves. The old board of vice-presidents and trustees were also re-elected as was Secretary Burr of the Beneficiary Department.

The proposed revision of the constitution and by-laws was approved and adopted. On Article IV. of the by-laws a lively debate arose participated in by President Hurst from the floor, Vice-President Biddle in the chair, and by W. H. Hassett, T. F. Brennan, Albert E. Jones, J. B. Jones, George W. Burr, Fred W. Dixon, J. W. Linnehan and others. With slight modifications it was finally adopted.

In the afternoon President Hurst made an address speaking to the members of their duties to the organization and to each other. In closing he thanked them for his re-election and for the support the had given him during the past year. He then called upon Treasurer Jones who responded in a short but earnest speech.

J. W. Linnehan and Fred W. Dixon have the matter of preparing a new manual in charge, which will be issued during the coming year.

The meeting was most enthusiastic throughout. A banquet provided in the spacious dining hall was voted by the members to be "all right." The meeting adjourned at 4 P. M.

Adopted the Dubois System.

The Newberry Knitting Mills at Newberry, S. C., which recently decided to do their own dyeing and bleaching, have adopted the Dubois system and contracted with Mr. A. N. Dubois, 2170 Sedgeley Ave., Philadelphia, Pa., for all the machinery, and will use his formula for sanitary fast black and lisle thread finish and bleaching. Another patent has recently been issued by Mr. Dubois for a yarn oxidized by rotation. He has many patents now covering his formula and machinery, and claims for his new lisle thread finish on fast black and direct colors have recently been allowed and patents will soon be issued.

Announcement by the Shultz Belting Company.

St. Louis, Mo., U. S. A., Nov. 1, 1902.
To Our Patrons and Friends:

We take pleasure in announcing to you that we have just completed remodeling and enlarging our factory, and are prepared to supply you with the best belting, lace leather, etc., that we have ever turned out. We use nothing but the heaviest packer steer hides, and prepare the leather by our own special process. We have added new buildings, increasing our capacity two and one-half times, and have also added a full line of new and modern machinery. We have the latest improved stretching machinery and device of our own, by which we take all the stretch out of the belting. We have now a thoroughly equipped, up-to-date tannery and belt factory, second to none in the United States.

Our Sable rawhide belting has a reputation founded upon years of use in some of the largest plants in the United States, and in every country in the world where belting is used. Shultz Sable rawhide belting and rawhide lace leather saves trouble in any factory, as those who have used it will testify.

Shultz belt dressing is the result of forty years' experience in tanning and preparing leather, and it answers the purpose fully for which it is intended. It makes a belt soft and pliable, and fills up the pores, causing it to adhere to the pulley, thus giving to the belt much greater driving power, and prolongs the life of the belt.

Shultz belting cement is a cement that holds. It is no cheap glue, but is a combinaton of the best materials to be found in the world, and when a belt is cemented with it, it s there to stay.

When in need of anything in our line, we would be pleased to supply you with something that we can guarantee to be superior in every respect. Thanking you for past favors, we are,

Yours respectfully,
Shultz Belting Company.

The Steel Thread Board Or [illegible] Many Mills.

Of the many improvements made in machinery for cotton spinning during the last decade, few have met with such general approval as the steel thread board, manufactured by L. T. Houghton, 89 Exchange St., Worcester, Mass. Nearly half a million have been sold since March 1, 1902.

The following are some of the mills that are either using or have ordered them: Fall River Iron Works, Stafford Mills, Durfee Mills, Wetamoe Mills, all of Fall River, Mass.; The Whitman Mills, New Bedford, Mass.; The Golden Belt Mfg. Co., Durham, N. Carolina; The Anderson Cotton Mills, Anderson, S. Carolina; The Elmira Knitting Mill, Elmira, N. Y.; Mass. Cotton Mill, Lindale, Georgia; The Uxbridge Cotton Mill, Otis Mfg. Co., The Thorndyke Co., West Warren Mfg. Co., Renfrew Mfg. Co., North Adams, The Arnold Print Works, all of Mass., and the Hope Co., Hope, R. I.

A. E. Purple, Moodus, Conn., has changed all his wood boards to steel.

When such mills as these are using and specifying Steel Thread Boards, it must mean that the Steel Thread Boards have exceptional merits and advantages over wooden ones. These mills ordered or specified them after giving the Thread Board a practical trial.

One of the largest builders of cotton machinery said, "An old frame equipped with this Steel Thread Board would be as good as a new frame." Another builder of cotton machinery says that not another frame should ever be built unless equipped with Metal Thread Boards and Hardened Thread Guides.

When one comes to examine and compare Steel Thread Boards with wooden ones long in use, their wonder is not at their phenomenal sale in such a short time, but that new frames should be ordered without them.

Every practical cotton spinner knows that wooden Thread Boards require constant care to maintain the thread guide

THE REMODELLED SCHULTZ BELTING WORKS.

in passable adjustment. Cotton spinners who have used these Steel Thread Boards assert that the attendant troubles of wooden Thread Boards are eliminated by their use. The nearer perfection the adjustment of a machine, the better the results obtained.

The superintendent of one of the largest cotton mills in Rhode Island says that his Thread Boards cause him more trouble than all the rest of the mill. Mr. Houghton tells us that in a recent conversation with an official of a great cotton machinery building company, he remarked, "We have devoted our time for the last twenty years to developing and improving the spindle and ring, and have given the thread boards but a passing thought. Still it is just as necessary that the thread be delivered exactly over the centre of the spindle, as it is to have the spindle central to the ring."

If that statement is correct, then a thread board that gives exact adjustment and maintains it will come into general use.

We have watched the development of this Steel Thread Board from the beginning: seen it go through the stage of being called "a good thing," then samples put out for trial, then single frames fitted up, then more frames, then new frames specified, and now the big rush of orders, which signifies that its success is assured. It is, of course, somewhat natural that manufacturers may hesitate about changing over all their frames in use, but in ordering new frames they can easily adopt and specify this important improvement. Mr. Houghton has some interesting data on the subject which manufacturers and spinners can send for with profit.

—The Utica Dyeing Co., who have lately been enlarging their drying room, as reported in our news columns, put in ten new dryers of new patent vertical design, and now have one of the best equipped drying rooms in the state. This addition was made necessary to keep up with their increasing orders.

Air Moistening.

Among the orders recently received by the American Moistening Co., Boston, Mass., are the following: Massachusetts Mills, Lindale, Ga., repeat order for humidifiers for their new mill; Emerald Worsted Mills of Albert Herbst & Co., Philadelphia, Pa., system of humidifiers; American Spinning Co., Greenville, S. C., repeat order for humidifiers; Eagle and Phenix Mills, Columbus, Ga., repeat order for an extension of the humidifying system in the Girard Mills; Whitman Mills, New Bedford, Mass., repeat order for humidifiers covering carding and spinning departments; Smith and Dove Mfg. Co., Andover, Mass., repeat order; Edgefield Mfg. Co., Edgefield, S. C., complete system of humidifiers; Overland Cotton Mills, Denver, Col., complete equipment for their carding, spinning and weaving department; Coosa Mfg. Co., Piedmont, Ala., system of humidifiers; Oliver Lupton & Co., Manayunk, Philadelphia, Pa., system of humidifiers for Whittington Mill; Cannon Mfg. Co., Concord, N. C., repeat order for humidifiers; Kincaid Mfg. Co., Griffin, Ga., complete equipment of humidifiers; Boyd-Mangham Mfg. Co., Griffin, Ga., system of humidifiers.

Notes From Lowell.

The Hamilton Mills are running on schedule time. There are some changes at the Tremont and Suffolk staff; Mr. Thomas Bugbee who has been overseer of the carding for a long time, has handed in his resignation and retired from mill life.

The following incident, though of trifling importance, may be of some interest owing to the glimpse it gives of life in New England nearly seventy years ago. Mrs. Lavinia Taplin, of Coaticook, Canada, told me that in 1834, Mr. Shurtleff was sent with a lumber wagon covered with cloth as emigrant wagons used to be, to Stanstead Plains, Canada, to get help for the Merrimac Company. She and about twenty other young girls came down with him. They were a week on the road, stopping at taverns by night. They brought as much food with them as possible and one of the girls had a bag of doughnuts that she carried in her lap all the way for fear it would be lost. The girls had to pay their fare down and thought there was not much spring in "that old ox."

At that time there were no railroads and Mrs. Taplin saw the first train come into Lowell from Boston. They went to work at five o'clock, working fourteen hours a day. One of the girls was late one morning and came in with her nightcap on, which she had forgotten to take off. So much for the good old times we hear so much about.

C. F. T.

Dixon's Graphite Pipe-Joint Compound.

There is perhaps no better economy to the steam-fitter and the engineer than a perfectly tight joint, yet one that can be easily taken apart if desired.

It is possible to have such joints if Dixon's Graphite Pipe-Joint Compound is used. Flake graphite is impervious to the action of heat or cold, acids or alkalies. Hence the value of a graphite compound when properly prepared.

The Joseph Dixon Crucible Company of Jersey City, N. J., will send booklet and sample free of charge.

Cotton Warps and Cable Cords.

Attention is called to the announcement of the Ravine Mills Co., Vernon, Conn., on another page. This company is prepared to furnish cotton warps and cable and hawser laid cords in white and colors, put up on beams, tubes or in skeins as may be desired. They use a uniform grade of extra staple cotton, and are in a position to supply customers' wants promptly. They make a specialty of sewing thread for woolen mills put up on Universal cones or tubes.

—The Glenlyon Dye Works, Saylesville, R. I., have placed a rush order with the Green Fuel Economizer Company for their well known machine. The coal strike caused an influx of orders for Economizers.

The Recognition of Industrial Excellence in Germany.

How close an interest is taken by the State in Germany in native industrial activity and productiveness is evinced in many ways, direct and indirect. To the former category belongs the awarding of medals varying in worth as the productiveness of the recipients, and the Imperial Gazette has just published a list of firms, the excellence of whose "gewerbliche Leistungen," or services in the cause of industry, have been deemed worthy of direct recognition on the part of the State. Fancy the British Government awarding a medal to a home manufacturer for turning out superior linen or india rubber goods! Yet this is what happens in Germany. It is not our intention to advertise German firms, so we mention no names, but content ourselves with stating that two gold medals have fallen to Berlin, three silver medals to Berlin and Kiel, and five bronze medals to Berlin, Cologne, Oeynhausen, and Sudenburg-Magdeburg. When may English firms expect similar encouragement from their State?—Commercial Intelligence.

There's No Place More Homelike.

Lakewood the fashionable—Lakewood the glorious, is the one resort to which the resorter now turns for a period of enjoyment, and such enjoyment includes every known sport.

Lakewood's drives, than which there are none better, attract a gay throng and traps of every kind are in constant use. The hunt attracts many, likewise cycling and polo, but when one finds such delightful, yes wonderful links as Lakewood possesses, one little wonders that golf is the popular game. Another feature of prominence is its hotels, hostelries commodious, grand or rather palatial, where one's welfare is the first and foremost consideration. These qualifications, including a most marvelous atmosphere, have made Lakewood famous the World over. This resort is reached only via the New Jersey Central, and its passenger department in New York has issued a booklet on Lakewood which is replete with information, and it's yours for the asking.

—The American Blower Company of Detroit, Mich., has recently booked a number of large orders for heating apparatus including plants for the Lackawanna Steel Co.'s roll shop at Buffalo, N. Y.; The Pittsburg Valve Foundry Construction Co., Pittsburg, Pa.; Fox Typewriter Co., Grand Rapids, Mich., and the National Malleable Castings Co. at Sharon, Pa., also the entire drying apparatus for the new starch factory of Piel Bros., Indianapolis, Ind.

—The management of the Brookville Woolen Mills, Brookville, Pa., gave to all their employees and all connected with the business, an elaborate dinner on Thanksgiving Day at the Commercial Hotel, which was highly appreciated and enjoyed. These mills manufacture exclusively a fine line of melton cassimeres. The success it has attained and the demand for its goods speak well for its management and all its employees.

Refined Surroundings.

Of the innumerable winter resorts at which congregates the multitudes interested in social and out door pleasures, none is more prominent or popular than Lakewood. It is the rendezvous of the refined, an abode of persons who delight in good living and exquisite environs.

It is in New Jersey's famous pine belt, the health giving properties of which are renowned the world over. Lakewood is only 59 miles from New York and reached in nearly the same number of minutes via the New Jersey Central. Lakewood's hotels are the standard by which other winter resort houses are governed, and it is needless, therefore, to say that they are perfection. The schools at Lakewood rank high and for a winter's home there is no place better adapted. Booklet of Lakewood upon application to C. M. Burt, General Passenger Agent, New Jersey Central, New York City, Dept. Ad.

Softening and Purifying Water.

F. G. Street, 36 LaSalle St., Chicago, Ill., has been appointed sole agent for Northern Illinois, Indiana, Michigan, Minnesota, Wisconsin, North and South Dakota and Kansas, for the Scaife and We-Fu-Go water softening and purifying systems, manufactured only by Wm. B. Scaife & Sons Co., Pittsburg, Pa.

Mr. Street is known throughout the territory he will handle, in manufacturing and engineering circles, and has given the subject of water purification considerable attention, and is in a position to furnish complete information on this subject.

David G. Rodgers Co.

David G. Rodgers of 169-171 Van Houten Street, Paterson, N. J., dealer in general mill supplies, has incorporated his business under the name of the David G. Rodgers Co., with a capital stock of $50,000. They have recently installed a machine for cutting ribbon paper which will cut five tons of paper a day. Mr. Rodgers's long experience in the trade and the fact that he remains manager of the company, bespeak for the new corporation the same business prosperity it has enjoyed for the last three years. Mr. Rodgers states that it is the intention of the company to enlarge its present building in the spring.

Soluble Softening Oil.

This material is manufactured by the Arabol Manufacturing Company of New York City. It is claimed to be superior for use as a softener, to tallow, to be reliable and remain in sweet condition summer and winter. It gives a smooth finish to the warps, the threads divide well in the lease rods, and the cylinders of the slasher remain perfectly clean.

It is neutral and the Arabol Co. recommend it as most suitable for strong and close woven goods, such as corduroys, velveteens, sateens, twills, umbrella cloths, cambric, warp, etc. It is easily handled.

IN AND OUT OF THE MILL.

Samuel Slater, the "Father of American Manufactures."

Biography is chiefly interesting when it relates to men who have done things that last and perhaps the efforts of no one person have been productive of more benefit to the people of this country than those of Samuel Slater.

He was born in Derbyshire, England, in 1768. His father was a timber merchant and able to give him a good education, but the family was large and when Jedediah Strutt, a neighbor and a partner of Arkwright in the cotton spinning business, asked that one of the sons be apprenticed to him, the proposition was welcomed and Slater, Sr., suggested that he take Samuel, not then fourteen years of age, because he "wrote well and was good at figures." Later events proved this choice to have been an eminently fortunate one.

Cotton spinning at that time was not specially lucrative and before young Slater went to Mr. Strutt he asked him if he considered the business a permanent one. Mr. Strutt told him it was not likely it would always be as good as it was then, but if it was properly managed it would doubtless be a source of livelihood for some years. The entire cotton business in England was then confined to one small district in Derbyshire and the whole output was about equal to that of a New England village sixty years ago. The outlook for the future was not promising, but he determined to risk it and entered on his apprenticeship of six years and a half in January, 1783.

All his spare moments were spent in making experiments with machinery and for one contrivance, a motion that enabled more yarn to be wound on a bobbin, he was presented with a guinea. In the course of time he became an excellent machinist and familiar with all the improvements made. During the last years of his term he was overseer of the machinery and manufacturing departments, and after his indenture had expired was engaged to superintend the erection of some new works being added to the mill.

A copy of an invoice of cotton twist yarn dated 1784 shows the price of yarn in England to have been $1.54 a pound for No. 30 and $2.60 for No. 31. The price of cotton varied from 24 cents to 50 cents a pound.

At that time manufactures of all kinds in the United States were at a very low ebb. Various attempts had been made to manufcature yarn and cloth in different places, principally in Massachusetts, Rhode Island, New York and Pennsylvania, but notwithstanding the persevering efforts of the people and the assistance given by the state legislatures, not one of them had succeeded in anything like a satisfactory degree. There was a great want of mechanics, tools were scarce, machinery could be obtained only at great expense, and when procured no one could be found who knew anything of its practical operation and but little of its theory.

England, to which the young nation had to look for many things, was very jealous of her commercial privileges; proclamations were issued forbidding tradesmen to leave the kingdom and heavy penalties imposed on those who tried to export machinery or even send out of the country drafts or working models. In this way the inventions of Hargreaves, Arkwright and others were kept out of the United States for twenty years after they had been in successful operation in England, but reports of their wonderful performances had reached the United States and created such an impression that a number of the different state governments had offered bounties to inventors and manufacturers. Reports of these bounties reached England and a newspaper account of £100 given by the State of Pennsylvania to a person who had imperfectly succeeded in constructing a carding machine, decided Slater to come to America. His position in England was an excellent one, but he feared the cotton spinning business would be overdone there and felt sure the United States offered him just the opportunities he needed.

On account of the severe government restrictions he left home without telling any one of his intentions and took with him no models, drafts nor specifications of any kind. The whole art was in his mind, the only place that could not be rummaged by custom house officials. He left England in September, 1789, and landed in New York sixty-six days later. He went to work immediately with a New York manufacturing company, but was not favorably impressed with the appearance of the business. Through the captain of one of the Providence packets he learned that Almy and Brown, of Providence, had been trying for some time to establish cotton spinning there. He wrote them, told them he had been in Arkwright's mills for eight years and could build machinery and spin yarn, either for stockings or twist, equal to any made in England and asked what "encouragement" they would be willing to give him as manager of their business. Brown replied that their frame for ring spinning (then called a water-frame) was the first of its kind to be attempted in America and was very imperfect, the yarn spun on it being 150 to 200 yds. a pound, but if Slater would go there, perfect it and operate it successfully, he might have all the profits of the business for six months, above the interest of the money invested and the wear and tear of the machinery, "and this we do for the information thou canst give us." There was also an implied promise that if Slater was all he professed to be, they would take him into partnership later.

With these inducements and assurances Slater went to Providence in January,

1790, and made an agreement with Almy and Brown to commence operations at Pawtucket. Their machinery was two spinning frames, one of thirty-two spindles, the other of twenty-four, an eighty-four and sixty-spindle jenny, a doubling and twisting jenny and a stock card. The wooden rolls were covered with calf-skin and the taking up regulated by leather strings.

The spinning frame had been made from the Massachusetts "State's Model." It was intended to be operated by a crank, but it was too hard to turn by hand and too imperfect to be turned by water; the carding machine was out of order, and altogether the machinery was so disappointing that after numerous failures in trying to run it, it was proposed that Slater should build a series of new machines after the Arkwright patents, and in April a partnership agreement was signed by which Slater was made half owner in the new works to be erected.

(To be continued.)

An Awful Jolt.

From the Chicago News:

"I say, barbah," queried the very young man as he paused at the door of a crowded tonsorial parlor. "how long will I—aw—have to wait foh a shave?"

"Oh," replied the barber as he glanced at the beardless face of the speaker, "you might come back in a couple of years."

W.—"How do you tell the age of a hen?" V.—"By the teeth." W.—"A hen hasn't any teeth." V.—"No, but I have."

"How is your brother, Tommy?" "Ill in bed; he's hurt himself." "How did he do that?" "We were playing who could lean furthest out of the window, and he won."—Boston Globe.

Sightseeing at Niagara.—Casey—There's the big power house yez moight have hear-rd tell av.

Kelly—An' phwat's it for?

Casey—Phwat's it for? Phwy, yez great ignoramus, yez, that's phwere th' power comes from t' kape th' falls supploied wid wather.—Puck.

"Honesty, my son," said the millionaire congressman, "is the best policy."

"Well, perhaps it is, dad," rejoined the youthful philosopher, "but it strikes me you have done pretty well, nevertheless."—Chicago Daily News.

"I wonder how Venus de Milo came to lose her arms." "Broke them off probably trying to button her shirtwaist up the back."—Philadelphia Press.

—Luck is an easy fellow. He bestows his gifts on the first jackass that crosses his path.—Fliegende Blaetter.

"Now, then, children," said the teacher who had been commenting upon polar expeditions, "who can tell me what fierce animals inhabit the regions of the North Pole?" "Polecats," shouted the boy at the foot of the class.—Philadelphia Press.

Probably a small boy never so thoroughly realizes that fighting is wicked as when he is getting the worst of the encounter.—Chicago News.

Of Course.

Landlord—"See here, Mr. Dauber, my patience is exhausted. You'll have to pay your rent or get out."

Tenant—"All right. Would you mind lending me a dollar or two for moving expenses?"—New York Sun.

Went with the Majority.

A well known surgeon, according to the Melbourne Punch, was imparting some clinical instruction to half a dozen students who accompanied him in his rounds. Pausing at the bedside of a doubtful case, he said, "Now, gentlemen, do you think this is or is not a case for operation?" One by one the students made their diagnoses, and all of them answered in the negative. "Well, gentlemen, you are all wrong," said the wielder of the free and flashing scalpel, "and I shall operate tomorrow." "No, you won't," exclaimed the patient as he rose in his bed. "Six to one is a good majority. Gimme my clothes!"

Harold—Pa!

Father—Oh, be quiet.

Harold—Pa!

Father—Well, what is it?

Harold—What did the Dead Sea die of?

"I'm sorry to have to mess your face so, kitty," said Tommy, as he daubed pussy's face with jam, "but I can't have folks suspecting me."—Columbus State Journal.

A Newcastle man, who seldom attends church services, was persuaded to hear a sermon last Sunday, and was much impressed. "You are never too old to learn," he remarked confidentially to a friend. "Now I always thought Sodom and Gomorrah were husband and wife, and I find they were nothing but cities."—American Weekly.

Permit is Necessary.

Richley—"I am the architect of my own fortune."

Hichley—"Aren't you afraid of a visit from the building inspector?"—Town and Country.

A Mill Barber.

It was in a New Hempshire mill town many years ago. Parker Horn was boss carder and Murty Kirk, a farmer's son and a regular rube from up the country, was his helper. Murty's hair was thick and wiry, and hung straight down the side of his head to the middle of his neck, where it was cut off square, as if with a chisel. Some people said Murty's mother cut his hair by placing a large sugar bowl over his head, and then running the shears around the edge of the bowl. His hair certainly looked as if it had been cut by some kind of machinery.

One day Murty wanted his hair cut and asked Parker to cut it. Parker consented to do this and placed Murty on a board across the grinder frame. Instead of using a bowl, he clipped the hair as close as the shears would cut it. Occasionally when it cut a little too close he was reminded of it by a yell from Murty.

"By George," said Parker rubbing his eyes, "this hair is so stiff it flies in my eyes when I cut it. Say, Murty, why don't you have your head shaved? the hair will then grow out nice and soft and curly."

"Will it?" asked Murty.

"Sure."

"All right, go ahead."

Parker got a razor and shaved every vestige of hair from Murty's head. Now Murty's head was a very peculiar shape, some between that of an orang-outang and a giraffe, and I shall never forget the roar that went up from the card room hands as Murty's bald head appeared at the door.

Murty's hair began to grow right away, and in two weeks he had quite a good crop. It came out stiffer and straighter than ever and without the suspicion of the curl that Parker had promised.

This is one incident in my experience many years ago when the relations between mill owners, mill overseers and mill hands were much more intimate than in these day of large mill corporations.

Sam Driver.

Blobbs—I shall have to wear glasses.
Slobbs—Do your eyes trouble you?
Blobbs—What did you think I was going to wear them for? Bunions?

Stella—So, Mabel's married! Who's the happy man?
Bella—Don't think there is any.

A sure cure for little worries is a real serious trouble.

Wife.—"But why don't you want me to buy your neckties any more?"
Husband.—"Well—er—I'd rather buy them myself than have you go to all that trouble."
Wife.—"But I like to do things for you."
Husband.—"Oh, in that case I'll let you look after the furnace this winter."—Chicago News.

"I hear your son is reading law." "No sir. It is a mistake. My son is sitting in the back office, with his feet on a desk smoking cigarettes."—Chicago Record-Herald.

Point of View.

When a fellow has spent
His last red cent,
The world looks blue—you bet!
But give him a dollar
And you'll hear him holler;
"There's life in the old land yet!"
—Atlanta Constitution.

Indignant Mother—George, if you had a little boy who made himself as dirty as you are, what would you do with him.
George (aged three, muddy from head to foot)—I—I'd wash him.—Tid Bits.

The Parson—My boy, I'm sorry to see you flying your kite on the Sabbath.
Small Boy—Dat's all right, mister. Dis kite's made of a religious paper. See!—St. Louis Dispatch.

Sure.

Mrs. Dearborn—They tell me your cook is an Angel.
Mrs. Wabash—I reckon she is. She tried to light the fire with kerosene this morning.—Yonkers Statesman.

Casey's Truism.

Dennis—"'Tis th' early bur-rd gets th' wur-rm, Misther Casey?"
Casey—"'Tis thot. If you want to keep yere head above wather these days, ye ca-ant let th' grass grow under yere feet, Misther Dinnis."—Detroit Free Press.

Teacher—"Johnnie, this is the worst composition in the class, and I'm going to write to your father and tell him."
Johnnie—"Don't keer if ye do; he wrote it for me."—Detroit Free Press.

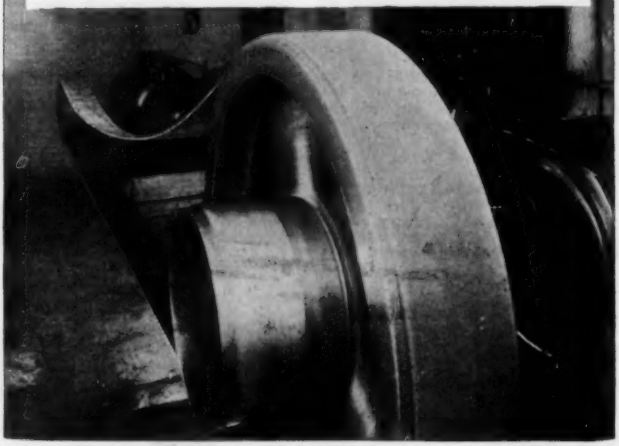
WHAT'S THE FRICTION LOAD IN A MILL WHOSE BELTS RUN THIS WAY?

TIGHTENING STRAIN ALL GONE. JOURNAL FRICTION CUT IN TWO.

CLING-SURFACE LETS ANY BELT RUN EASY. THIS BELT REPRESENTS 6 YEARS USE BUT RAN THUS AFTER FIRST WEEK. ASK US.

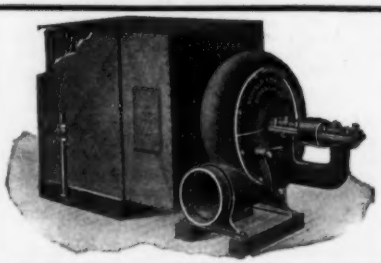
CLING-SURFACE MFG. CO.,
199-205 Virginia St., Buffalo, N. Y.

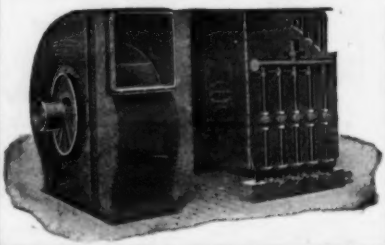
BOSTON NEW YORK PHILADELPHIA



Buffalo Fan System

HEATING—VENTILATING
DRYING
FOR TEXTILE MILLS
AIR CIRCULATION
UNIFORM—POSITIVE and
UNDER COMPLETE
CONTROL.





Buffalo Mechanical Draft Fans

Forced and Induced Draft.
Double your steaming capacity,
Raise your boiler efficiency,
CUT DOWN YOUR COAL BILL.

BUFFALO FORGE CO.,
BUFFALO, N. Y.

BUYERS' INDEX.

Advertisers whose names do not appear under desired headings will please notify the publishers. Such omissions are accidental, not intentional.

Alphabetical Index to Advertisements follows this Classified List.

Air Moistening System.
American Moistening Co., 150 Devonshire St., Boston.

Architects and Mill Engineers.
Ferguson, John W., Paterson, N. J.
Gray, Arthur F., Exchange Bldg., Boston.
Green, Samuel M., Holyoke, Mass.
Suck, Adolph, 179 Summer St., Boston.

Attorney-at-Law.
Dawson, H. Horace, 309 Mutual Life Bldg., Philadelphia, Pa.

Automatic Feeds for Cotton and Wool.
Atlas Foundry & Mch. Co., Newark, N. J.
Harwood, Geo. S. & Son, 53 State St., Boston.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila., Pa.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.
Smith, Jas. Woolen Machinery Co., Phila.

Bailing Machine.
Torrance Mfg. Co, 18 Davis St, E. Newark, N. J.

Bandings.
See under Yarns.

Bands and Labels.
Docker-Foster Co., Phila., Pa.

Baskets.
Ballou Basket Works, Belding, Mich.
Lane, W. T. & Bro., Port Chester, N. Y.

Belting.
Alexander Bros., 410 No. 3d St., Phila., Pa.
Boston Belting Co., Boston, Mass.
Dodge Mfg. Co., Mishawaka, Ind.
Graton & Knight Mfg. Co., Worcester, Mass
Houghton, E. F. & Co., 3rd and Somerset Sts., Phila.
Jeffrey Manufacturing Co., Columbus, Ohio.
Keystone Leather Belting Works, Norristown, Pa.
Main Belting Co, 1219 Carpenter St, Phila.
Popham, Henry, & Son, Newark, New Jersey.
Shultz Belting Co., St. Louis, Mo.
Smith, Jas. Woolen Mach. Co., Phila, Pa.
See also Mill Supplies.

Belt Dressing.
Alexander Bros, 410 No. 3d St, Phila, Pa.
Cling Surface Mfg. Co., 168 Virginia St., Buffalo, N. Y.
Dixon, Jas Crucible Co., Jersey City, N. J.
Keystone Leather Belting Works, Norristown, Pa.
Stephenson Mfg. Co., Albany, N. Y.

Belt Hooks.
Bristol Co., Waterbury, Ct.

Bindings.
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Bleaching Mixers.
Allen, Wm. & Sons Co., Worcester, Mass.

Bleaching Materials.
Bosson & Lane, Boston.
Roessler & Hasslacher Chemical Co, 100 William St, New York.

Block Cutting for Printing.
Atlas Copper Stamp Works, 15 Whitehall St., New York.

Blowers, and Blower Systems.
American Blower Co., Detroit, Mich.
Boston Blower Co., Hyde Park, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Mass. Fan Co., Waltham, Mass.
Sturtevant, B. F. Co., Boston, Mass.

Bobbins, Spools, Shuttles, Etc.
McGuire, John A, Co, Claremont, N. H.
Southern Bobbin Co., Greensboro, N. C.
Sweet & Doyle, Cohoes, N. Y.
Tebbets, E. L., & Co., Locke's Mill, Me.

Boilers.
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Boiler Compounds.
International Boiler Compound Co., 48 Market St., Chicago, Ill.

Boxes, Cloth Boards, Etc.
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Boxes Paper.
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Braiding Machinery.
New England Butt Co., Providence, R. I
Textile Machine Works, Reading, Pa.

Braids.
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Brass (Perforated.)
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Brushes.
Felton, S. A. & Son Co., Manchester, N. H.
Parks & Woolson Mach. Co., Springfield Vt.

Brushers
See Napping Machines.

Burr Pickers.
Atlas Foundry & Mch. Co., Newark, N. J.
Curtis & Marble Machine Co., Worcester, Mass.
Sargent's, C. G., Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.

Calico Printers' Machinery and Supplies.
Arlington Machine Works, (Arthur Birch) Arlington Heights, Mass.
Birch Brothers (Albert Birch), Somerville, Mass.
Butterworth, H. W., Sons & Co., Philadelphia.
Taunton New Bedford Copper Co., New Bedford, Mass.
Textile Finishing Mach'y Co., 17 Exchange Pl., Providence, R. I.
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Canvas Baskets.
Ballou Basket Works, Belding, Mich.
Lane, W. T. & Bro., Port Chester, N. Y.

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Riverdale Woolen Co., Northbridge, Mass.

Carbonizing Machinery.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts, Phila.
Sargent's, C. G., Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.

Card Clothing.
Ashworth, Elijah, Fall River, Mass.
Booth, Benj. & Co., Philadelphia.
Edma Card Clothing Co, 422 S. 5th St, Camden, N. J.
Leigh, Evan A, 35 Mason Building, Boston

Card Feeds
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Card Grinding Machinery.
Smith, Jas. Woolen Machinery Co., Phila.

Carders' Tools.
Brown, W. H, Mechanic St, Worcester Mass.

Carpet Machinery.
Altemus, Jacob K., 2816 N. 4th St, Phila, Pa.
Curtis & Marble Machine Co, Worcester, Ma.
Howard, Geo. C., Lansdowne, Pa. and 2123 Market St., Philadelphia, Pa.
Parks & Woolson Mach. Co., Springfield, Vt.
Smith, Jas. Woolen Machinery Co., Phila.

Castings.
Livermore, Homer F., 85 Pearl St., Boston.

Chemicals and Apparatus.
Fiedt, Geo. D. & Co, 528 Arch St, Phila, Pa.
Roessler & Hasslacher Chemical Co, 100 William St, New York.

Chemist.
Austen, Peter T., 80 Broad St., New York.
Cling Surface.
Cling Surface Mfg. Co., Buffalo, N. Y.
Clocks.
Howard, E. Clock Co., 403 Washington St., Boston, Mass., 41 Maiden Lane, New York.
Riggs & Brothers, 310 Market St. Philadelphia, Pa.
Cloth Boards.
Chaffee Bros, Oxford, Mass.
Clutches.
American Tool & Machine Co., Boston, Mass.
Dodge Mfg. Co., Mishawaka, Ind.
Eastern Machinery Co., The, New Haven, Conn.
Hunter, James, Machine Co., North Adams, Mass.
Smith, Jas. Woolen Machinery Co., Phila.
Combs (Wool and Cotton).
Crabb, William, & Co, Newark, N. J.
Townsend, Thomas, 157 Orange St., Providence, R. I.
Conveying Machinery and Chains.
Jeffrey Manufacturing Co., Columbus, O.
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U. S. Mineral Wool Co., 141 Liberty St., New York.
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Copper Print Rollers.
Taunton-New Bedford Copper Co., New Bedford, Mass.
Copper Work for Dyers.
Butterworth, H. W. & Sons Co., Philadelphia.
Textile Finishing Mach'y Co., 17 Exchange Pl., Providence, R. I.
Cotton.
Blaisdell Jr, Co., S., Chicopee, Mass.
Charles, W. B., Amsterdam, N. Y.
Cotton Bale Ties.
DeHaven Mfg. Co., 50 Columbia Heights, Brooklyn, N. Y.
Cotton Elevators.
Buffalo Forge Co., Buffalo, N. Y.
Cotton Machinery.
Altemus, Jacob K., 2816 N. 4th St, Phila., Pa.
Ashworth, Elijah, Fall River, Mass.
Barber & Colman, 11 Pemberton Sq., Boston.
Brownell, G. L., Worcester, Mass.
Butterworth, H. W. & Sons Co., Philadelphia.
Curtis & Marble Machine Co, Worcester, Mass.
Draper Company, Hopedale, Mass.
Easton-Burnham Co., Pawtucket, R. I.
Fairmount Machine Co, 22d and Wood Sts, Philadelphia.
Houghton, L. T., Worcester, Mass.
Howard & Bullough American Machine Co, Pawtucket, R. I.
Kilburn, Lincoln & Co, Fall River, Mass.
Kitson Machine Co., Lowell, Mass.
Leigh, Evan A, 35 Mason Building, Boston.
Lever, Oswald, Lehigh Ave. and Masher St., Philadelphia.
Lowe, Stephen C., 186 Devonshire St., Boston, Agt. John Hetherington & Sons, Ltd.
Lowell Machine Shop, Lowell, Mass.
Mason Machine Works, Taunton, Mass.
Parks & Woolson Mach. Co., Springfield, Vt.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia, Pa.
Philadelphia Textile Machinery Co, Hancock and Somerset Sts, Philadelphia, Pa.
Saco & Pettee Machine Shops, Newton, Upper Falls, Mass.
Schofield, Geo. L., Philadelphia.
Smith, Jas., Woolen Machinery Co. Phila.
Whitin Machinery Wks, Whitinsville, Mass.
Cotton Openers and Lappers.
Howard & Bullough American Machine Co, Pawtucket, R. I.
Kitson Machine Co., Lowell, Mass.
Cotton Softeners.
Bosson & Lane, Boston, Mass.
Cotton Waste.
Blaisdell, Jr., Co., S., Chicopee, Mass.
Charles, W. B., Amsterdam, N. Y.
Credits.
National Mercantile Agency, New York and Boston.
Cutters for Knit Fabrics.
Kennedy, Thos. (Cutters, etc.,) Cohoes, N. Y.
Dating and Time Stamps.
Riggs & Brothers, 310 Market St., Philadelphia, Pa.
Dextrine.
Elwell, Henry A. & Co., Philadelphia, Pa.
Stein, Hirsh & Co, 165 Duane St., New York.
Dryers.
American Blower Co., Detroit.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Brothers (Albert Birch), Somerville, Mass.
Boston Blower Co., Hyde Park, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Butterworth, H. W. & Sons Co., Philadelphia.
Hunter, Jas., Machine Co., No. Adams Mass.
Kenyon, D. R. & Son., Raritan, N. J.
Mass. Fan Co., Waltham, Mass.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia.
Philadelphia Textile Machinery Co, Philadelphia, Pa.
Sargent's, C. G., Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.
Sturtevant, B. F. Co., 34 Oliver St., Boston, Mass.
Textile Finishing Mach'y Co., 17 Exchange Pl., Providence, R. I.
Dusters.
See Wool and Waste Dusters.
Dust Collectors.
Allington & Curtis Mfg. Co., Saginaw, Mich.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.
Dyers, Bleachers and Finishers.
Brophy's, T, Sons, Jasper St, Philadelphia
Cohoes Dye Works, Cohoes, N. Y.
Cranston Worsted Mills (yarns), Bristol, R. I.
Davidson & Brooke, 2560 No. 3rd St., Philadelphia.
Duncan & Baillie, Cohoes, N. Y.
Firth & Foster Co., Kensington, Pa.
Greenwood, R. & Bault, Frankford, Pa.
Home Bleach & Dye Works, Pawtucket and Valley Falls, R. I.
Howard & Co., Rahway, N. J.
Ingrahamville Dye Works, Pawtucket, R. I.
Kagermann, Edward, 1210 Orianna St., Phila.
Lawrence Dye Works Co., Lawrence, Mass.
Lorimers, The Wm. H. & Sons Co., Phila.
Molt Bros., Millbury, Mass. (Indigo Blue.)
Pawtucket Dyeing & Bleaching Co, Pawtucket, R. I.
Pennypack Yarn Finishing Co., Holmesburg Pa.
Providence Mills Mfg. Co., 55 Girard Ave., Philadelphia Pa.
Rowland, Samuel, Schuylkill Haven, Pa.
Scranton Yarn Finishing Co., Scranton, Pa.
Whittier Mills, Chattahoochee, Ga., Treasurer's Office, Springfield, Mass.
Dyeing, Drying, Bleaching and Finishing Machinery.
American Blower Co., Detroit.
Antisdel E. M., 12 Miller St., Utica, N. Y., (Knit Dryer.)
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Bros. (Albert Birch), Somerville, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Butterworth, H. W. & Sons Co Phila Pa.
Curtis & Marble Machine Co, Worcester, Mass.
Delahunty Dyeing Machine Co., Pittston, Pa.
Dubois, A. N., 2170 Sedgeley Ave., Phila.
Fairmount Machine Co, 22 and Wood Sts, Philadelphia.

Howard, Geo. C., Lansdowne, Pa. and 2123 Market St, Philadelphia, Pa.
Kenyon, D. R. & Son, Raritan, N. J.
Klauder-Weldon Dyeing Machine Co., Amsterdam, N. Y.
Parks & Woolson Machine Co., Springfield, Vt.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia, Pa.
Philadelphia Textile Machinery Co, Hancock and Somerset Sts, Philadelphia, Pa.
Philadelphia Textile Specialty Co., 500 North 12th St., Phila.
Smith, Jas. Woolen Machinery Co., Phila.
Sturtevant, B. F. Co, 34 Oliver St, Boston, Mass. (Drying.)
Textile Finishing Mach'y Co., 17 Exchange Pl., Providence, R. I.

Dye House Cans.
Hill, James Mfg. Co., Providence, R. I.

Dye Sticks.
Bailey, Frank, Cedar Brook, New Jersey.
Haedrich, E. M., Philadelphia, Pa.

Dyestuffs and Chemicals.
Atteaux, F. E. & Co., 174-176 Purchase St., Boston.
Baily-Rodgers Co., 34 Moore St., New York.
Berlin Aniline Works, 72 Front St., N. Y.
Bischoff, & Co, 83 Park Place, N. Y.
Bosson & Lane, 36 Central Wharf, Boston.
Corey, S. J, 273 Congress St, Boston
Cassella Color Co., 182 Front St., New York.
Dillon & Co, 20 Cedar St, New York.
Dubois, A. N., 2170 Sedgeley Ave., Phila.
Elwell, Henry A. & Co., Philadelphia, Pa.
Farbenfabriken of Elberfeld Co, 40 Stone St, N. Y.
Ford, J. B. Co., Wyandotte, Mich.
Fortner, L. B., 36 Strawberry St., Phila.
Geisenheimer & Co, 189 Front St, New York.
Holliday & Sons, Ltd., Read, 7 Platt St., New York.
Johnson, Chas. A, & Co, 22 Dey St, N. Y
Keller, John J, & Co, 104-106 Murray St, N. Y.
Koechl, Victor, & Co, 122 Hudson St, N. Y.
Kuttroff, Pickhardt & Co., New York.
Molt Bros., Millbury, Mass. (Indigo Blue.)
N. Y. & Boston Dyewood Co, 55 Beekman St, New York.
Oil Seeds Pressing Co., 15-25 Whitehall St., New York.
Roessler & Hasslacher Chemical Co, 100 William St, New York.
Sharpless Dye Wool Ext. Co, The Bourse, Phila, Pa.
Sykes & Street, 85 Water St, N. Y.
Thayer, Ed. M., 106 Broad St., Boston, Mass.
Vila, H. S., 115 So. 2nd St., Philadelphia, Pa

Dynamos and Motors.
General Electric Co., 44 Broad St., New York
New England Machine Co., Pawtucket, R. I.
Sturtevant, Co., B. F. Boston.

Edgings.
See Tapes, Braids and Edgings.

Electrical Construction.
General Electric Co., 44 Broad St., New York.
New England Machine Co., Pawtucket, R.I.

Electric Fans.
American Blower Co., Detroit.
Buffalo Forge Co., Buffalo, N. Y.
General Electric Co., 44 Broad St., New York
Mass. Fan Co, Waltham, Mass.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila., Pa
Sturtevant Co., B. F., Boston.

Electric Lighting.
General Electric Co., 44 Broad St., New York.
New England Machine Co., Pawtucket, R. I.

Electric Motors.
General Electric Co., 44 Broad St., New York.
Sturtevant Co., B. F., Boston.

Electrotyping and Printing.
Whitcomb, H. C, & Co, Boston.

Elevators.
Cohoes Foundry & Machine Co, Cohoes, N.Y.
Eastern Machinery Co, The New Haven, Conn.
Jeffrey Manufacturing Co., Columbus, O.
Howard, Geo. C., Lansdowne, Pa and 2123 Market St, Philadelphia, Pa.
Salem Elevator Works, Salem, Mass.

Employers Time Recorders.
Riggs & Brothers, 310 Market St., Philadelphia, Pa.

Engine Stop.
Locke Regulator Co., Salem, Mass.

Exhaust Heads.
Burt Manufacturing Co, Akron, Ohio.
Pittsburgh Gage & Supply Co., Pittsburgh, Pa.
Sturtevant, B. F. Co., Boston, Mass.

Fans—Exhaust and Ventilating.
See Ventilating Apparatus.

Feed Water Heaters.
Green Fuel Economizer Co., Matteawan N. Y.
Scaife, W. B. & Sons, Pittsburg, Pa.

Feed Water Pumps.
Goulds Mfg. Co, Seneca Falls, N. Y.
Pittsburgh Gage & Supply Co., Pittsburgh, Pa
Scaife, W. B. & Sons, Pittsburg, Pa.

Feeds.
See Automatic Feeds.

Filters.
Automatic Water Purifying Co, 45 Broadway, N. Y.
Pittsburgh Gage & Supply Co., Pittsburgh, Pa.
Scaife, W. B. & Sons, Pittsburg, Pa.

Finishing Machinery.
See Dyeing, Drying, Bleaching and Finishing.

Fluted Rolls.
Cohoes Foundry & Machine Co., Cohoes, N.Y
Thurston, A. G & Son, Box 528, Fall River, Mass.

Forges.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant Co., B. F., Boston.

Friction Clutches.
See Clutches.

Friction Hoisting Drums.
Eastern Machinery Co., New Haven, Conn.

Fuel Economizers.
Green Fuel Economizer Co., Matteawan, N. Y.

Fulling Mills for Woolen Goods.
Hunt, Rodney, Machine Co, Orange, Mass.
Hunter Jas, Machine Co, No. Adams, Mass.
Kenyon, D. R. & Son, Raritan, N. J.

Garnetts.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.
Smith, Jas. Woolen Machinery Co., Phila.

Gas Engines.
Jones, Lewis, 60½ and Media Sts, Phila, Pa.

Gas Exhausters.
Sturtevant Co., B. F., Boston.

Gauges.
Pittsburgh Gage & Supply Co., Pittsburgh, Pa.

Gears.
New Process Raw Hide Co., Syracuse, N. Y.

Gear Cutting Machine.
Whiton, The D. E, Co, New London, Conn.

Generating Sets.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant Co., B. F., Boston.

Heating.
See Ventilating.

Heddles.
Watson, L. S, Mfg. Co, Leicester, Mass.

Hoisting Machinery.
The Eastern Machinery Co., New Haven, Conn.

Hose.
Boston Belting Co., Boston.

Hosiery Labels.
Docker, Foster Co., Philadelphia, Pa.
Saranac Electrical Mfg. Co., St. Joseph, Mich.

Hosiery Boards.
Pearson, J. T, Kensington, Pa.

Humidifying Apparatus.
American Air Moistening Co., Boston.

Hydro Extractors.
American Tool & Machine Co., Boston.
Textile Finishing Mach'y Co., 17 Exchange Pl., Providence, R. I.

Ironing Machines for Knit Goods.
Craw, J. W Laundry Machinery Co., So. Norwalk, Conn.

Jacquard Cards.
Rogers, H. E, South Manchester, Conn.

Knit Goods Edgings, Trimmings, etc.
Cathcart, John & Co., 115 Franklin St., New York.
Chapin, Geo. W. Philadelphia, Pa.
Charles, W, B., Amsterdam, N. Y.
Cheney Bros, Silk Goods, 479 Broome St, N. Y.
Friedberger Mfg Co, Edgings, Germantown, Phila, Pa.
Hepner & Horwitz, Lacings, 30 Howard St, N. Y.
Krout & Fite Mfg. Co, Allegheny Ave. and Emerald St., Phila.
Weimar Bros, 1817 East York St, Phila. Pa.

Knit Goods Finishing Machines, Crochet, Etc.
Arnold Sewing Machine Co., 216 High St., Newark, N. J.
Craw, J. W. Laundry Machinery Co., So. Norwalk, Conn.
Merrow Machine Co, The, Hartford, Conn.
Nye & Tredick Co., 606 Arch St, Phila, Pa.
Scott & Williams, 2079 E. Cumberland St, Phila Pa.
Willcox & Gibbs Sewing Mch. Co., New York.

Knitting Machine Cylinders.
Paxton & O'Neill, 129 Bread St, Phila, Pa.
Stafford & Holt, Little Falls, N. Y.

Knitting Machinery.
Adams Rib and Top Cutting Mch Co., Norristown, Pa.
American Knitting Machine Co., 6th and Arch St. Philadelphia, Pa.
Antisdel, E. M., 12 Miller St., Utica, N Y.
Babcock Machine Works, Fort Plain, N. Y.
Branson Machine Co., 506 N. American St., Philadelphia.
Brinton, H. & Co., 213 Race St., Philadelphia, Pa.
Cooper, Chas, Bennington, Vt.
Crane Mfg. Co, Lakeport, N. H.
Dresdner Strickmaschinenfabrik, Irmscher & Co. Dresden-Lobtau, Germany.
Excelsior Knitting Machine Manufacturing Co., Allentown, Pa.
Jenckes, E. Mfg. Co, Pawtucket, R. I.
Jones, Lewis, 60 1-2 and Media Sts, Philadelphia, Pa.
Kennedy, Thos. (Cutters, etc.), Cohoes, N. Y
Keystone Knitting Machine Mfg. Co., 40 N 7th St., Phila.
Lamb Knitting Mach. Mfg. Co., Chicopee Falls, Mass.
Leighton Machine Co, Manchester, N. H.
Ludwig, E. H, Hawley, Pa.
Mayo Knitting Machine & Needle Co, Franklin, N. H.
McMichael & Wildman Mfg. Co, Norristown, Pa.
Mueller, Arthur, 760 Lexington Avenue., Brooklyn, N. Y.
Nye & Tredick Co., 606 Arch St, Phila, Pa.
Paxton & O'Neill, 127 Bread St, Phila, Pa.
Pepper Mch. Works, Lakeport, N. H.
Ruth & Co., Norristown, Pa.
Scott & Williams, 2079 E. Cumberland St., Phila., Pa.
Snyder, Homer P. Mfg. Co., Little Falls, N. Y.
Stafford & Holt, Little Falls, N. Y.
Taylor, James, 835 Arch St., Philadelphia.
Tompkins Bros., Troy, N. Y.

Knitting Needles and Supplies.
Breedon's, Wm, Son, Amsterdam, N. Y.
Brinton, H. & Co., 213 Race St., Philadelphia, Pa.
Cooper, Chas, Bennington, Vt.
Corey, Wm, Co, Manchester, N. H.
Crane Mfg. Co, Lakeport, N. H.
Dodge Needle Co., Manchester, N. H.
Ives, Loyal T. New Brunswick, N. J.
Keystone Knitting Machine Mfg. Co., 40 N 7th St., Philadelphia.
Lamb Knitting Machine Mfg. Co., Chicopee Falls, Mass.
Manufacturers' Supplies Co., 2800 No. 6th St. Philadelphia.
Mayo Knitting Machine & Needle Co Franklin, N. H.
Page Needle Co, Chicopee Falls, Mass.
Treat, Orion, Manchester Green, Conn.
Wardwell Needle Co, Lakeport, N. H.

Knotter for Spoolers.
Barber & Colman, 11 Pemberton Sq., Boston

Labeling Machine.
Saranac Electrical Mfg. Co., St. Joseph, Mich.

Laboratory Outfits.
Feidt, Geo. D. & Co, 528 Arch St. Phila, Pa.

Leather.
Houghton, E. F. & Co., 3rd and Somerset Sts., Phil'a.

Leather Boards.
Rogers Paper Mfg. Co, Inc., South Manchester, Conn.

Looms.
Draper Company, Hopedale, Mass.
Fairmount Machine Works, 22d and Wood Sts. Philadelphia.
Howard, Geo. C., Lansdowne, Pa. and 2122 Market St., Philadelphia, Pa. (For wire.)
Kilburn, Lincoln & Co. Fall River, Mass.
Leigh, Evan A., 35 Mason Bldg., Boston.
Lowell Machine Shop, Lowell, Mass.
Mason Machine Works, Taunton, Mass.
Smith, Jas. Woolen Machinery Co., Phila.
Whitin Machine Works, Whitinsville, Ms.

Loopers.
Beattie's Machine Works, Cohoes, N. Y.

Lubricators.
Dixon, Jos., Crucible Co, Jersey City, N. J.
Pittsburgh Gage & Supply Co., Pittsburgh Pa.

Lug Straps.
Black Diamond Lug Strap Co., 1850 Perkiomen Ave., Reading, Pa.

Lumber.
Stearns, A. T, Lumber Co, Neponset, Mass.

Lumpers.
Gerry, George, & Son, Athol, Mass.

Machinery Dealers.
Jefferson, Ed, & Bro, 127 South 2d St., Phila, Pa.
Pittsburgh Gage & Supply Co., Pittsburgh, Pa.
Schofield, Geo. L. Phila., Pa.
Taylor, James, 835 Arch St., Philadelphia.

Machinists.
New England Machine Co., Pawtucket, R. I.

Machinists' Tools.
Dodge Mfg. Co., Mishawaka, Ind.
Whiton, The D. E. Co, New London, Conn.

Mails.
Walder, J, Paterson, N. J.

Measuring and Folding Machines.
Curtis & Marble Machine Co, Worcester, Ms.
Elliott & Hall, 54½ Hermon St, Worcester Mass.
Parks & Woolson Mach. Co., Springfield Vt.

Mechanical Draft.
American Blower Co., Detroit.
Boston Blower Co., Hyde Park, Mass.
Buffalo Forge Co, Buffalo., N. Y.
Mass. Fan Co., Waltham, Mass.
Sturtevant, B. F. Co., Boston, Mass.

Mechanical Engineers.
American Blower Co., Detroit, Mich.
Buffalo Forge Co., Buffalo, N. Y.
Green, Samuel M., Holyoke, Mass.
Sturtevant Co., B. F., Boston.
Suck, Adolph, 179 Summer St., Boston.

Mechanical Specialties.
New England Mach. Co., Pawtucket, R. I.

Mercerizing Machinery.
Butterworth, H. W. & Sons, Philadelphia.
Klauder Weldon Dyeing Machine Co., Amsterdam, N. Y.
Philadelphia Textile Specialty Co., 500 North 12th St, Phila.
Textile Finishing Mach'y Co., 17 Exchange Pl., Providence, R. I.

Mill Architects.
See Architects & Mill Engineers.
Mill Baskets.
Lane, W. T. & Bro., Port Chester, N. Y.
Mill Brushes.
See Brushes.
Mill Builders and Engineers.
Ferguson, John W. Paterson, N. J.
Mill Sewing Machines.
(See Sewing Machines and Supplies.)
Mill Supplies.
American Supply Co, Providence, R. I.
Bamford & Smith, Pascoag, R. I.
Bristol, The, Co., Waterbury, Conn.
Buckley's, Benj. Son, Gun Mill, Paterson, N. J.
Chase Pulley Co., Providence, R. I.
Dixon Lubricating Saddle Co., Bristol, R.I
Dodge Mfg. Co., Mishawaka, Ind.
Easton-Burnham Co., Pawtucket, R. I.
Houghton, E. F. & Co., 3rd and Somerset Sts, Phila.
Jefferson, Ed, & Bro, 127 South 2d St., Phila, Pa.
Jeffrey Manufacturing Co., Columbus, O.
Keystone Leather Belting Works, Norristown, Pa.
Lane, W. T. & Bro., Port Chester, N. Y.
Main Belting Co, 1219 Carpenter St, Phila.
Oil Seeds Pressing Co., 15-25 Whitehall St., New York.
Pittsburgh Gage & Supply Co., Pittsburgh, Pa.
Shaw, Victor, Ring Traveller Co., Providence, R. I.
Smith, Jas. Woolen Machinery Co., Phila.
Southern Bobbin Co., Greensboro, N. C.
Stephenson Mfg. Co., Albany, N. Y.
Sweet & Doyle, Cohoes, N. Y.
Thurston, A. G. & Son, Fall River, Mass.
Watson, L. S, Mfg.Co, Leicester, Mass.
Napping Machines.
Columbia Napping Machine Co., Somerville, Mass.
Curtis & Marble Machine Co, Worcester, Mass.
Jones, Lewis, 60 1-2 and Media Sts., Philadelphia, Pa.
Parks & Woolson Mach. Co., Springfield, Vt.
Nails (Silk.)
Ryle, Wm & Co., 54 Howard St., N. Y.
Malcolm Mills Co., Frankford, Pa.
Oil Cups.
Pittsburgh Gage & Supply Co., Pittsburgh, Pa.
Oil Filters.
Burt Manufacturing Co., Akron, Ohio.
Houghton, E. F. & Co., 3rd and Somerset Sts., Phila.
Pittsburgh Gage & Supply Co., Pittsburgh, Pa.
Oils.
Houghton, E. F. & Co., 3rd and Somerset Sts., Phila.
Oil Seeds Pressing Co., 15-25 Whitehall St. New York.
Stephenson Mfg Co., Albany, N. Y.
Oilless Bearings.
Arguto Oilless Bearing Co, Wayne Junction, Phila.
Overseaming Machines.
Arnold Sewing Machine Co., 216 High St., Newark, N. J
Merrow Machine Co., Hartford, Conn.
Union Special Sewing Machine Co., 75 Kinzie St., Chicago, Ill
Willcox & Gibbs Sewing Machine Co., New York.
Oxidizing Machinery.
Dubois, A. N., 2170 Sedgeley Ave., Phila.
Packing.
Boston Belting Co , Boston.
Jenkins Bros., New York.
Paint.
F. E. Hook, 29-44 Hook Bldg., Hudson, Mich
Painting Machines.
F. E. Hook, 29 44 Hook Bldg , Hudson, Mich.
Pantagraphs for Mill Engraving.
Johnson, C. A. & Co. 92 Dey St, New York.
Paper Box Machinery.
Samuel M. Langston, 701 Locust St., Phila., Pa.
Paper Tubes.
Sayford Paper Specialty Co., Camden, N. J.
Patent Solicitors.
Crosby & Gregory, 24 School St, Boston.
R. J. Jacker, 911 Monadnock Blk., Chicago, Ill.
Siggers & Siggers, Washington, D. C.
Straley, Hasbrouck & Schloeder, 257 Broadway, New York.
Perforated Metals.
Beckley, A. J. & Co., 248 Pearl St., New York.
Peroxide of Sodium.
Roessler & Hasslacher Chemical Co., 100 William St, New York.
Picker Sticks.
Southern Bobbin Co., Greensboro, N. C.
Pipe Covering.
Keasbey, R. A, 83 Warren St, New York.
Pneumatic Conveying.
See Ventilating.
Power Transmitting Machinery.
Arguto Oilless Bearing Co, Wayne Junction, Phila.
Chase Pulley Co., Providence, R. I.
Dodge Mfg. Co , Mishawaka, Ind.
Eastern Machinery Co, New Haven, Conn.
Fairmount Machine Works, 22d and Wood Sts, Philadelphia.
Howard, Geo. C., Lansdowne, Pa. and 2123 Market St , Philadelphia, Pa.
Hunter, Jas, Machine Co, No. Adams, Mass.
Jeffrey Manufacturing Co., Columbus, O.
Kilburn, Lincoln & Co, Fall River, Mass.
Pittsburgh Gage & Supply Co., Pittsburgh, Pa.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila.
Saginaw Manufacturing Co., Saginaw, Mich.
Smith, Jas. Woolen Machinery Co., Phila.
Textile Finishing Mach'y Co., 17 Exchange Pl., Providence, R. I.
Preparatory Machinery, (Cotton).
Atherton, A. T., Mach. Co., Pawtucket, R. I.
Howard & Bullough Am. Machine Co., Pawtucket, R. I.
Kitson Machine Co., Lowell, Mass.
Saco & Pettee Machine Shops, Newton Upper Falls, Mass.
Press Boards and Fenders.
Rogers Paper Mfg. Co., Inc., South Manchester, Conn.
Presses.
Boomer & Boschert Press Co., 338 West Water St., Syracuse, N. Y.
Butterworth, H. W. & Sons Co., Philadelphia.
Curtis & Marble Machine Co, Worcester, Ms
Hart, Charles, Frankford, Philadelphia.
Howard, Geo C., Lansdowne, Pa. and 2123 Market St. Philadelphia, Pa.
Spence & Rideout, Nashua, N. H.
(Power, Screw, Hydraulic, Hollow Steam Plate).
Textile Finishing Mach'y Co., 17 Exchange Pl., Providence, R. I.
Pulleys.
See Power Transmitting Machinery.
Pumps.
Gould's Mfg. Co, Seneca Falls, N. Y.
Textile Finishing Mach'y Co., 17 Exchange Pl , Providence, R. I.
Purifying & Filtration Plants.
Scaife, W. B. & Sons, Pittsburg, Pa.
Rag Pickers.
Smith, Jas. Woolen Mach. Co., Phila, Pa.
Raw Hide Gears.
New Process Raw Hide Co. Syracuse, N. Y
Reed and Harness Manufacturers.
American Supply Co, Providence, R. I.
Walder, J, Paterson, N. J.
Remnants.
Feingold, H. & D., 91 Bedford St., Boston.
Ribbons.
Cheney Bros, S. Manchester, Ct.
Ring Travellers.
DeHaven Mfg. Co , 50 Columbia Heights, Brooklyn, N. Y.
National Ring Traveller Co., Providence, R. I.
Shaw, Victor, Ring Traveller Co., Providence, R. I.

Rope Transmission.
Dodge Mfg. Co., Mishawaka, Ind.
Roving Cans.
Hill, James Mfg. Co., Providence, R. I.
N. E. Ventilating & Heating Co, 950 Manton Ave, Providence, R. I.
Laminar Fibre Co., No. Cambridge, Mass.
Walrus Fibre Mfg. Co., Medford, Mass.
Rubber Covered Rollers and Goods.
Boston Belting Co., Boston.
Saddles and Stirrups.
Dixon Lubricating Saddle Co., Bristol, R. I
Scales
Sweet & Doyle, Cohoes, N. Y.
Scallop Machines.
Merrow Machine Co., Hartford, Conn.
Schools.
American School at the Armour Institute of Tecnology, Chicago, Ill.
International Correspondence Schools, Scranton, Pa.
Lowell Textile School, Lowell, Mass.
New Bedford Textile School, New Bedford, Mass.
Philadelphia Textile School, Phila, Pa.
Sewing Machines and Supplies.
Arnold Sewing Machine Co., 216 High St,. Newark, N J.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Bros. (Albert Birch), Somerville, Mass.
Curtis & Marble Machine Co, Worcester, Mass.
Dinsmore Mfg. Co., Salem, Mass.
Fales, L. F., Walpole, Mass.
Manufacturers' Supplies Co., 66 No. 4th St., Philadelphia.
Textile Finishing Mach'y Co , 17 Exchange Pl., Providence, R. I.
Union Button Sewing Mch. Co., 164 High St., Boston.
Union Special Sewing Machine Co., 75 Kinzie St., Chicago, Ill.
Willcox & Gibbs S. M. Co., New York.
Shafting Hangers, Etc.
See Power Transmission Machinery.
Shearing Machinery.
See Dyeing, Drying, Bleaching and Finishing.
Shell Rolls.
Cohoes Foundry & Mach. Co. Cohoes, N. Y
Thurston, A. G, & Son, Box 528, Fall River, Mass.
Shoddies.
See Wool Shoddies.
Shuttles.
See Bobbins, Spools, Shuttles, Etc.
Shuttle Checks.
Victor Shuttle Check Co., Auburn, N. Y.
Silk Machinery.
Butterworth, H. W. Sons Co, Philadelphia.
Mason Machine Works, Taunton, Mass.
Textile Finishing Mach'y Co., 17 Exchange Pl., Providence, R. I.
Singe Plates.
Butterworth, H. W. Sons Co., Philadelphia.
Screens (Perforated.)
See under Perforated Metal.
Selling Agents.
See Commission Merchants.
Separators.
Draper Co., The, Hopedale, Mass.
Ring Frame Thread Protector Co., The Amsterdam, N. Y.
Taunton-New Bedford Copper Co., New Bedford, Mass.
Singeing Machines.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Bros. (Albert Birch). Somerville. Mass.
Butterworth, H. W. Sons Co., Philadelphia.
Curtis & Marble Machine Co, Worcester, Ma.
Textile Finishing Mach'y Co., 17 Exchange Pl., Providence, R. I.
Sizing, Starch and Gums.
Arabol Mfg. Co., 155 William St., New York
Elwell Henry A. & Co., Philadelphia, Pa
O. K. Soap Co. 968 Franklin St., Phila.
Stein Hirsch & Co, 165 Duane St, New York
Skylights.
Drouve Co., G., Bridgeport, Conn.
Slashers.
Cohoes F'ndry & Machine Co, Cohoes, N. Y
Lowell Machine Shop, Lowell, Mass.
Smokestacks.
Allen, Wm. & Sons Co., Worcester, Mass.
Soaps.
Elwell, Henry A. & Co., Philadelphia, Pa.
India Alkali Works, Boston, Mass.
O. K. Soap Co., 968 Franklin St., Phila.
Special Machinery.
New England Mach. Co., Pawtucket, R. I.
Spindles.
Bamford & Smith, Pascoag, R. I.
Buckley, Benj's, Sons, Gun Mill, Paterson, N. J.
Draper Company, Hopedale, Mass.
Easton-Burnham Co., Pawtucket, R. I.
Ward & Vandergrift, Elmer, N. J.
Whitin Machine Wks, Whitinsville, Mass.
Spindle Tubes.
Bamford & Smith, Pascoag, R. I.
Spinning Cylinders.
N. E. Ventilating & Heating Co, 950 Manton Ave, Providence, R. I.
Spinning Frames.
See Cotton Machinery.
Spinning Rings.
Draper Company, Hopedale, Mass
Whitinsville Spinning Ring Co, Whitinsville, Mass.
Spinning Tubes.
Buckley, Benj's. Son, Gun Mill, Paterson, N. J.
Spools. *See Bobbins, Spools Shuttles, Etc.*
Spooler Knotter.
Barber & Colman, 11 Pemberton Sq., Boston.
Stamps for Hosiery.
Atlas Copper Stamp Works, 15 Whitehall St., N. Y.
Wells, Wilfred, 805 W. Lehigh Ave., Phila.
Steam Boilers.
Allen, Wm & Sons Co., Worcester, Mass.
Brown, C. H, & Co, Fitchburg, Mass.
Steam Boiler Insurance.
Hartford Steam Boiler Inspection & Insurance Co, Hartford, Conn.
Steam Boxes.
Allen, Wm. & Sons Co., Worcester, Mass.
Steam Engines.
American Blower Co., Detroit, Mich.
Brown, C. H, & Co, Fitchburg, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Hooven (The), Owens & Rentschler Co Hamilton, O.
Sturtevant, B. F. & Co., Boston.
Textile Finishing Mach'y Co., 17 Exchange Pl., Providence, R. I.
Steam Surface Coverings.
Keasbey, Robert A., New York.
Steam Specialties.
Butterworth H. W. Sons Co., Philadelphia.
Houghton, E. F. & Co., 3rd and Somerset Sts., Phila.
Jenkins Bros., New York.
Locke Regulator Co., Salem, Mass.
New York Lubricating Oil Co., 35 Water St., New York.
Pittsburgh Gage & Supply Co., Pittsburgh, Pa
Sturtevant Co., B F., Boston.
Textile Finishing Mach'y Co., 17 Exchange Pl., Providence, R. I.
Steam Valves.
Jenkins Bros., New York.
Stop Motion for Looms.
See, Warp Stop Motions.
Tanks, Tubs and Vats.
Davis, G. M. & Son, Palatka, Fla.
Cypress Lumber Co, Apalachicola, Fla.
Lewis, H. F. & Co., New Orleans, La.
Stearns, A. T. Lumber Co, Neponset, Mass.
Stevens, D. B. & Co., Auburn, Me.
Textile Finishing Mach'y Co., 17 Exchange Pl., Providence, R. I.
Woolford, George, 2240 No. 9th St, Phila, Pa.
Tapes, Braids and Edgings.
Cathcart, John, & Co, 115 Franklin St, N. Y
Chapin, Geo W Philadelphia Pa.
Friedberger Mfg. Co, Germantown, Pa.
Hamilton, J. H. & Co., 84 Franklin St., N. Y.
Krout & Fite Mfg. Co., Allegheny Ave. and Emerald St., Philadelphia.

Weimar Bros, 1517 East York St, Phila, Pa.

Temples.
Draper Co., Hopedale, Mass.

Tension Pulleys.
Arguto Oilless Bearing Co, Wayne Junction, Phila.
N. E. Venulating & Heating Co, 960 Manton Ave, Providence, R. I.

Tentering Machines.
See Dyeing, Bleaching Machinery, Etc.

Tenter Clips.
See Dyeing, Drying, Bleaching and Finishing Machinery.

Testing Machines.
Howard, Geo. C., Lansdowne, Pa. and 2123 Market St., Philadelphia, Pa.

Textile Schools.
See Schools.

Thread Board for Spinning & Twisting Frames.
Houghton, L. T. Worcester, Mass.

Tickets and Labels.
Saranac Electrical Mfg. Co., St. Joseph, Mich.

Tower Clocks.
Howard E. Clock Co., 403 Washington St., Boston; 41 Maiden Lane, New York.

Turbine Governors.
Replogle Governor Works, Akron, O.

Turbines.
(See Water Wheels.)

Twine Machinery.
Brownell, G. L., Worcester, Mass.

Twisting Machinery.
Brownell, G. L., Worcester, Mass.
Bullock, Mach Co., O. S., 179 Broadway, Cambridgeport, Mass.

Valves.
Boston Belting Co., Boston, Mass.
Locke Regulator Co., Salem, Mass.

Ventilating Apparatus.
Allington & Curtis Mfg. Co., Saginaw, Mich., 81 Wareham St., Boston.
American Air Moistening Co., Boston
American Blower Co., Detroit, Mich.
Berry, A. Hun, 23 W. 1st St. Boston, Mass.
Boston Blower Co., Hyde Park, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Drouve Co., G., Bridgeport, Conn.
Massachusetts Fan Co., Waltham, Mass.
New England Ventilating & Heating Co, Providence. R. I.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia.
Philadelphia Textile Machinery Co, Hancock St, above Lehigh Ave, Phila, Pa.
Sargent's, C. G., Sons, Graniteville, Mass.
The Sterling Blower & Pipe Mfg. Co., 44 Huyshope St, Hartford, Conn.
Sturtevant, B. F. Co, 34 Oliver St, Boston.

Warp Stop Motions.
Draper Co., Hopedale, Mass.

Washers (Cloth).
Arlington Machine Works, (Arthur Birch) Arlington Heights, Mass.
Birch Brothers (Albert Birch), Somerville, Mass
Butterworth, H. W. & Sons Co., Philadel.
Hunt, Rodney, Machine Co, Orange, Mass.
Hunter, Jas, Machine Co, No. Adams, Mass.
Kenyon D. R., & Son, Raritan, N. J.
Rusden Machine Co, Warren, R. I.

Washing Soda.
Ford, J. B. Co., Wyandotte, Mich.

Watchman's Clocks.
Eco Magneto Clock Co, 620 Atlantic Ave, Boston.
Howard, E Clock Co., 403 Washington St., Boston, Mass., 41 Maiden Lane, New York.
Nanz & Co, 127 Duane St., New York.
Riggs & Brothers, 310 Market St., Philadelphia, Pa.

Water Purifiers & Filters.
Automatic Water Purifying Co., 45 Broadway, N. Y.
Scaife, W B. & Sons, Pittsburg, Pa.

Water Wheels.
Hunt, Rodney, Machine Co, Orange, Mass.
Leffel, James, & Co, Springfield, O.

Water Wheel Governors.
Cohoes Foundry & Machine Co, Cohoes, N. Y.
Leffel, James & Co, Springfield, Ohio.
Replogle Governor Works, Broadway and Chestnut Sts., Akron, Ohio.

Whitewashing Machines.
F. E. Hook, 2944 Hook Bldg., Hudson, Mich.

Winders. (Back.)
Taylor, Jas., 835 Arch St., Philadelphia.

Winder Bobbins.
Sweet & Doyle, Cohoes, N. Y.

Winders. (Hosiery.)
Altemus, Jacob K., Philadelphia.
Foster Machine Co., Westfield, Mass.
Lever, Oswald, Lehigh Ave. and Mascher St., Philadelphia.
Snyder, Homer P. Mfg. Co., Little Falls, N. Y
Universal Winding Co, 95 South Street, Boston.

Wood Pulleys.
Chase Pulley Co., Providence, R. I.
Dodge Mfg Co., Mishawaka, Ind.
Pittsburgh Gage & Supply Co., Pittsburgh, Pa.
Saginaw Manufacturing Co, Saginaw, Mich.

Wool Cleaning Compound.
Ford, J. B. Co., Wyandotte, Mich.
India Alkali Works, Boston.

Wool Combing Machinery.
Leigh, Evan A. 35 Mason Bldg., Boston.

Wool and Waste Dusters.
Atlas Foundry and Mch. Co., Newark, N. J.
Gerry, Geo. & Son, Athol, Mass.
Sargents', C. G., Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.
Stillman, Victor C., Westerly, R. I.

Woolen and Worsted Machinery.
Altemus, Jacob K., 2816 N. 4th St, Phila, Pa.
American Tool and Machine Co., Boston.
Arguto Oilless Bearing Co, Wayne Junction, Phila
Arlington Mch. Works (Arthur Birch), Arlington Heights, Mass.
Atlas Foundry and Mch Wks., Newark, N.J.
Birch Brothers (Albert Birch), Somerville, Mass.
Butterworth, H. W. Sons Co., Philadelphia.
Curtis & Marble Machine Co, Worcester, Mass.
Fales, L. F , Walpole, Mass.
Fairmount Machine Works, 22d and Wood Sts, Philadelphia.
Furbush, M. A. & Son Machine Co, Phila, Pa.
Harwood, Geo. S. & Son, 53 State St., Boston.
Howard, Geo. C., Lansdowne, Pa. and 2123 Market St., Philadelphia, Pa.
Hunt, Rodney, Machine Co, Orange, Mass.
Hunter, Jas, Machine Co. No. Adams, Mass.
Jefferson, Ed. & Bro, 127 South Second St., Phila, Pa.
Kensington Machine Works, Mascher St., below Lehigh Ave., Phila.
Kenyon D. R. & Son, Raritan, N. J.
Leigh, Evan A. 35 Mason Bldg, Boston.
Lever, Oswald, Lehigh Ave. and Mascher St., Philadelphia, Pa.
Lowe, Stephen C., 186 Devonshire St., Boston. Agt. John Hetherington & Sons, Ltd.
Parks & Woolson Machine Co., Springfield, Vt.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Philadelphia.
Sargent's, C. G., Sons, Graniteville, Mass.
Schofield, Geo. L., Philadelphia.
Smith, Jas. Woolen Machinery Co., Phila.
Textile Finishing Mach'y Co., 17 Exchange Pl., Providence, R. I.

Wool Oiling Apparatus.
Harwood, Geo. S. & Son, 53 State St., Boston.

Wool Shoddies.
Riverdale Woolen Co, Northbridge, Mass.
Slack, Wm. H. H., & Bro, Springfield, Vt.

Wool Washing, Preparing and Drying Machinery.
Hunter, Jas. Machine Co., No. Adams, Mass.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.
Sargent's, C. G. Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.

YARNS, THREADS, ETC.

Banding.

Moore, C. & Co, 12 S. 5th St, Phila, Pa.
Tucker & Cook Mfg. Co, Conway, Mass.
Toohey, M J. & Co., Fall River, Mass.
Whittier Mills, Chattahoochee, Ga., Treasurer's Office, Springfield, Mass.

Cotton Yarns.

American Cotton Yarn Exchange, 67 Chauncy St., Boston.
Ballou Yarn Co., Providence, R. I.
Blythe, Richard A., 114 Chestnut St., Phila.
Buckingham Paulson Co., 83 Leonard St. New York.
Catlin & Co, New York, Boston, Phila. and Chicago.
Chapin, Geo. W., 229 Church St., Phila., Pa.
Charles, W. B., Amsterdam, N. Y.
Dana Warp Mills, Westbrook Me.
Dexter Yarn Co., Pawtucket, R. I.
Dodds, J. S., 517 Wool Exchange, New York.
Eddy & Street, Providence, R. I.
Spring St., N. Y.
Eichmann & Sternberg, New York.
Grant Yarn Co, Fitchburg, Mass.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
Indian Orchard Co., Indian Orchard, Mass.
Jenckes, E., Mfg. Co., Pawtucket, R. I.
Mitchell, Jas. E. & Co, Boston and Phila, Pa.
Moeller & Littauer, 109 Greene St, New York.
Montgomery, J. R, Co, Windsor Locks, Ct.
Monument Mills, Housatonic, Mass.
Morgan, E. A., 54 Franklin St., N. Y.
Orswell Mills, Fitchburg, Mass.
Salkeld, A. D. & Bro., 66 Leonard St., N. Y.
Tucker & Cook Mfg. Co, Conway, Mass.
Whittier Mills, Chattaoochee, Ga., Treas. Office, Springfield, Mass.

Cotton Warps.

New England Warp Co., New Haven, Conn.
Ravine Mills Co', New Haven, Conn.

Cotton Yarns Wool Spun.

Broadbent, J. & Sons, Unionville, Conn.

Flax. Hemp. Jute and Ramie.

Fawcett, Hughes, 115 Franklin St., N. Y
Eichmann & Sternberg, 530 Broadway, N. Y
Morgan, E. A., 54 Franklin St., N. Y.

Gassed Yarns.

Ballou Yarn Co., Providence, R. I.
Dodds, J. S., 517 Wool Exchange, New York.
Eichmann & Sternberg, New York.
Greene & Daniels Mfg. Co, Pawtucket, R. I.

Glazed Yarns.

Ballou Yarn Co., Providence R. I.
Blythe, Richard A. 114 Chestnut St., Phila.
Chapin, Geo. W., 229 Church St., Phila., Pa.
Eichmann & Sternberg, 530 Broadway, N. Y.
Indian Orchard Co., Indian Orchard, Mass.
Lorimers, Wm. H. & Sons Co., Philadelphia.
Malcolm Mills Co, Frankford, Pa.
Orswell Mills, Fitchburg, Mass.
Rockwell, E. M, Leominster, Mass.
Salkeld, A. D. & Bro., 66 Leonard St., N. Y
Skerry, A. T, & Co, 47 Leonard St, N. Y.
Walcott & Campbell Spinning Co, New York Mills, Oneida Co. N. Y.
Whittier Mills, Chattahoochee, Ga., Treasurer's Office, Springfield, Mass.

Harness Twine.

Ballou Yarn Co., Providence, R. I.
Cranston Worsted Mills, Bristol, R. I.
Eichmann & Sternberg, 530 Broadway, N. Y.
Fawcett, Hughes, 115 Franklin St., N. Y.
Moore, C., & Co., (S. W. cor. 5th and Market Sts.)
Morgan, E. A., 54 Franklin St., N. Y.
Whittier Mills, Chattahoochee, Ga., Treasurer's Office, Springfield Mass.

Hosiery and Knitting Yarns.

Blythe, Richard A., 114 Chestnut St., Phila
Boyer, B. F. Co., Camden, N. J.
Broadbent, J. & Sons, Unionville, Conn.
Cranston Worsted Mills, Bristol, R. I.
Chapin, Geo. W., 229 Church St., Phila., Pa
Dexter Yarn Co., Pawtucket, R. I.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
Herbst, Albert & Co., E. Allegheny Ave., Philadelphia.
Hyde, E. S, 223 Chestnut St, Phila, Pa.
Jenckes, E., Manufacturing Co, Pawtucket, R. I.
Mitchell, James E, & Co, Phila. and Boston
Monument Mills, Housatonic Mass.
Moeller & Littauer, 109 Greene St., New York.
Queensbury Mills, Worcester, Mass.
Skerry, A. T. & Co., 47 Leonard St., N. Y.

Mercerized Yarns.

Blythe, Richard A. 114 Chestnut St., Phila.
Dodds, J. S., 517 Wool Exchange, New York.
Eichmann & Sternberg, 530 Broadway, N. Y.
Harper, E. J., 395 Broadway, New York.
Indian Orchard Co., Indian Orchard, Mass,
Lorimer, Wm. H. & Sons Co, Philadelphia.
Montgomery, J. R. & Co., Windsor Locks. Conn.
Morgan, E. A., 54 Franklin St., N. Y.
Pennypack Yarn Finisning Co., Holmesburg, Pa.

Mohair Yarns.

Cranston Worsted Mills, Bristol, R. I.
Montgomery & Co, J. R, Windsor Locks, Ct.
Morgan, E. A., 54 Franklin St., N. Y.

Novelty Yarns, Tinsels, Silk Noils, Etc.

Cranston Worsted Mills, Bristol, R. I
Eichmann & Sternberg, 530 Broadway, N. Y.
Indian Orchard Co., Indian Orchard, Mass.
Malcolm Mills Co. 229 Chestnut St, Phila, Pa.
Moeller & Littauer, 109 Greene St., New York.
Montgomery & Co, J. R, Windsor Locks, Ct.
Skerry, A. T, & Co, 47 Leonard, St, N. Y.

Silk Yarns.

Chapin, Geo. W., 229 Church St., Phila., Pa.
Cheney Bros, S. Manchester and Hartford Ct.
Eddy & Street, Providence, R. I.
Eichmann & Sternberg, 530 Broadway, N. Y.
Moeller & Littauer, 109 Greene St., New York.
Ryle, Wm, & Co, 54 Howard St, N. Y.

Woolen and Merino Yarns.

Boyer, B. F. Co., Camden, N. J.
Broadbent, J. & Sons, Unionville, Conn.
Eaton Rapids Woolen Mills, Eaton Rapids, Mich.
Eddy & Street, Providence, R. I.
Harper, E. J., 395 Broadway, New York.
Hyde, E. S, 223 Chestnut St, Phila, Pa.
Jenckes, E. Mfg. Co., Pawtucket, R. I.
Moeller & Littauer, 109 Greene St., New York.
Rockwell, E. M, Leominster, Mass.
Salkeld, A. D. & Bro., 66 Leonard St., N. Y
Skerry, A. T. & Co, 47 Leonard St, N. Y.
Solis, Andrew J, Jr, & Co, 179 Devonshire St, Boston, Mass.
Speed & Stephenson, 170 Summer St, Boston.

Worsted Yarns.

Alleghany Worsted Mills, Phila, Pa.
Boyer, B. F, Co, Camden, N. J.
Campion, Richard, 17 Bank St., Phila.
Cranston Worsted Mills, Bristol, R. I.
Croft, Howland, & Sons, cor. Broadway and Jefferson Ave., Camden, N. J.
Harper, E. G., 395 Broadway, New York.
Herbst, Albert, & Co., E. Allegheny Ave., Philadelphia.
Moeller & Littauer, 109 Greene St., New York.
Pocasset Worsted Co., Thornton, R. I.
Queensbury Mills, Worcester, Mass.
Salkeld, A. D. & Bro., 66 Leonard St., N. Y
Skerry, A. T, & Co, 47 Leonard St, N. Y.
Speed & Stephenson, 170 Summer St., Boston

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I have found ways to utilize many wastes and unapplied substances, converting losses into profits. Send for Waste Product Blank and Pamphlet.

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WE Contract to BUILD MACHINERY and Mechanical Specialties.

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Manufacturers' Agent with first-class connections and large premises, wishes to represent good accounts for Great Britain in above lines of goods. Address "BLANKETS," care Textile World, Boston.

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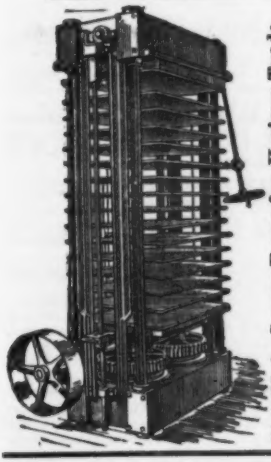

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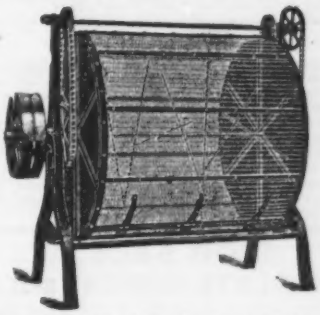

For Cleaning Wool Waste. Superior to any now in use.

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KNITTING MACHINERY FOR SALE.

1	N. & T.	Automatic Underwear Machine,			13	inch.	324	Needles,	four feed.
3	"	"	"	"	12½	"	312	"	" "
1	S. & W.	"	"	"	11	"	276	"	" "
1	"	"	"	"	11	"	276	"	eight "
3	N. & T.	"	Sleevers		3¾	"	73	"	two "
4	"	"	"		4	"	88	"	" "

These machines are all, except the eight feed, in first class condition and will be sold cheap

WM. S. LLOYD, - Wayne Junction, Phildadelphia.

SPECIAL NOTICES.

Rates: 15 cents a line, 7 words to a line.

MILL WANTED.

At town situated in centre of cotton belt of Texas. Excellent railroad facilities. An abundance of cheap fuel and water. Cheap homes. Liberal encouragement by citizens. Correspondence solicited from all interested. WYLIE BOARD OF TRADE, Wylie, Texas.

MILLWRIGHT WANTED.

Man of experience who can handle engineer's level and also splice ropes and belts. Only first class men need apply. State experience and salary wanted. "Millwright," care Textile World, Boston, Mass.

EXPERIENCED SALESMAN,

Desirous of making a change in the Spring, would like to arrange with mill making webs, narrow fabrics, etc., to handle all or part of output. Commission or salary. Responsibility and character satisfactory. Address 150 care Textile World.

HOSIERY LINE WANTED.

We want to get a medium priced line of hosiery from some good mill to carry with our own line of underwear on commission in Texas. Address, with particulars, J. T. T., care of Textile World.

LOOM FIXER WANTED.

For Knowles 20 harness dobby looms, also 20 harness Crompton dobby looms. Address "Knowles" care of Textile World.

FOR SALE.

A first class Miller Rotary Press, sixty-six inches, of the latest pattern. Apply to Empire Sponging Works, M. Kirchbaum, prop., 103-110 West 11th St., New York City.

FOR SALE.

Garment dyeing establishment in town of 12,000 people, nearest dye house 50 miles. Doing a business of $40 to $90 per week. Have 8 h. p. boiler, 8 dye tubs, extractor, iron cylinder, steam table and steam board, dye room, sewing machine, and everything that goes with a good location in centre of city. Cost $900. Good reason for selling. Entire business can be bought or will sell half interest to a dyer for $300. Address, H. Hardella, Box 33, Lincoln, Ill.

FOR SALE.

COMPLETE HOSIERY MILL

On paying basis, capacity 250 dozen per day in half hose and misses' ribbed hose. Modern mill construction building and desirable site. Artesian water supply and electric lighting plant. Full organized force of help in cottages controlled by mill. Mill offered for sale on account of lack of working capital. Ready home market for goods. Write for particulars if interested. Address, **B'HAM HOSIERY MILLS, Birmingham, Ala.** J. A. YATES, C. EXUM, } Assignees.

Trouble in the Card Room?

I have had a great deal of experience in straightening out troubles in card room. I believe I have worked in more card rooms than any other man in this country, and it has given me an unusual opportunity for noting all sorts of difficulties and the best way of overcoming them. Sometimes an outsider will quickly detect a point which a man always on the spot may overlook. I charge $4 a day and my expenses for expert service. Sometimes it is not necessary to visit the mills, as I can tell what the trouble is by correspondence, in which case my fee would be very reasonable. Address, Sam Driver, Pawtucket, R. I.

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SITUATIONS WANTED.

COTTON SUPERINTENDENTS.

1532 **Supt.** of cotton mill, a thoroughly capable man, is open to a position. Well up on English and American makes of machinery. Has manufactured yarns both in American and Egyptian cottons, from 17s to 70s. About 40 years of age; Scotch. Has held a responsible position in a New England company for the past 10 years.

1975 **A Linen Manufacturer,** who thoroughly understands linen and cotton fancy goods and damasks, is open to position as Supt. 40 years of age, Irish, married. Can refer to well-known mill owners. Terms reasonable.

2021 **Supt., Overseer of Carding,** assistant designer. Worked on sheetings and ginghams. Held position of overseer of carding and assistant to manager for past few years. Age 41; American. First class references.

1877 **Agent or Treasurer.** Good references. Recently assistant manager of a large mill. Fully competent.

1853 **Supt Cotton Mill,** or would take an overseer's position in a large mill North for the present. Has been assistant superintendent for past year, previous to which he was overseer of carding for nine years, and before that was overseer of carding and spinning in the South. First-class references. Can take position at once. Colored and white goods. English and American machinery.

2011 **Wanted,** a position as assistant superintendent of a fancy weaving mill, by a man having a thorough practical knowledge of weaving and designing. Age 32; married.

2077 **Superintendent.** Aged 42, married, desires position. Has worked on all classes of Jacquard work, linen, damask, Marseilles and crochet quilts. Been a manufacturer in Europe, also had experience in this country.

1872 **Supt. and Carder of Cotton.** Has handled all classes of goods 35 years; American, married. Best of references.

1226 **Cotton Supt.** Age 35; English. Fancies, lawns, sateens, twills, ducks, chambray, shirtings and dress goods, sheetings. Wants not less than $1600 per annum.

2074 **Supt.** cotton spinning mill is open to position. Age 32; German; married. Is familiar with all kinds of cotton goods. Excellent references.

ASSISTANT SUPERINTENDENT.

A young man, 27 years old; unmarried; who has had experience in every deparment of a cotton mill and thorough training, with the idea of learning the business, would like to secure a position as assistant to a cotton manufacturer or as assistant superintendent in some large mill. Opportunity for advancement is more of an object than immediate salary. Has acted as overseer in several departments for some time. Address "Russell," care of Textile World

WOOLEN SUPERINTENDENTS.

1982 **Supt.** of large experience in the manufacture of woolen and worsted fancies and suitings, is open to an engagement as supt. or designer. Age 45; American; married. Good references.

2028 **Supt.** woolen mill. Age 47; English; married. Wants New England or Middle States. 10 years' experience in first-class N. E. mills

1537 **Woolen Superintendent, Designer or Weaver.** Has worked on all classes of woolens, worsteds, cotton worsteds, fancy cassimeres, etc., and is acquainted with all Eastern makes of machinery. American. Age 34; married.

2053 **Agent,** or supt., or supt. and designer. Good manager of help and a hustler. Thoroughly understands manufacture of shoddy in all its branches, including carbonizing and extracting. Familiar with all manipulations of wool, shoddy and cotton. Fully competent to take agent's position, as is a good wool buyer, and can figure all prices on goods and percentages, etc.

1890 **Manager or Supt.** of a woolen mill, who understands designing, is open to an engagement. 34 years old; Scotch, and single. Large experience in Scotch and Canadian mills on tweeds, worsteds, overcoatings, etc. Good references.

1974 **Asst. Supt.** or Designer, woolen or worsted, who understands designing and also the work of every department. Has worked on fine worsteds, coverts, cheviots, kerseys, meltons and fancy cassimeres. Technical education acquired at Phila. Textile School. Six years' practical experience, three as designer. Age 24, American, good references. Will go anywhere.

1936 **Supt. or Designer,** an American, married, 38 years of age, is desirous of obtaining a position. Understands the manufacture of worsteds, cotton worsteds, cassimeres, meltons—steam face, flannels, and horse and bed blankets. Long experience and up-to-date in methods. Moderate wage.

1976 **Manager and Buyer.** Blankets, yarns, rugs and government cloths. Young Englishman, 30 managing a plant of 19 sets cards and 200 looms in England, desires similar position in Canada or the States. Thoroughly practical in every department. Can invest up to $1,500 into a small business of this kind.

1955 **Supt. and Designer,** English, 32 years old, married, is open to the above position in a woolen mill. 17 years' experience in England and this country on cassimeres, overcoatings, woolen dress goods, plaid backs, skirtings and cheviots. This is a good opportunity to obtain a young man of long experience.

1891 **Supt. of Woolen or Worsted** Mill, who understands designing, is open to a position. 23 years of age; an American; single. Well recommended, and with good experience.

WOOLEN CARDERS.

2079 **Overseer of Carding and Spinning.** Middle aged; English; married. Dress goods, flannels, blankets, overcoatings and plush goods. English and American makes of machinery, also an expert on the Bullette condenser.

2057 **Carder,** or carder and spinner. Age 28; German; married. All wool, wool and cotton and shoddy mixes. Davis & Furber, James Smith and Lombard machines.

2055 **Boss Carder.** Cotton, woolen, worsted and silk mixes of all kinds. Can take place at once, and wants not less than $3 per day. Age 48; American; married. Excellent references and experience.

2041 **Second hand of** large or overseer of small carding room is open to a position. 27 years old; American; married. Has had 12 years' experience on wool, wool and cotton, all shoddy and all grades of yarn. Now employed as second hand, but feels capable of taking charge of small room.

2046 **Boss Wool Carder** is open to a position. Age 45; American; married. Is familiar with most all classes of woolens. Will not go West or South. Thoroughly understands mixing and blending together different kinds of stock.

2069 **Overseer of Woolen Carding,** age 32; American; married. Good experience and excellent references. Worked in kersey-, meltons, cheviots, cassimeres, coverts, dress goods broad cloths, etc.

2083 **Overseer for Washing,** Carding or combing wool for worsted wants to better himself. Speaks German, French and English. Best of references.

COTTON CARDERS.

2054 **Overseer of Cotton Carding** or combing. Englishman; 47 years old; married. Wants not less than $3.

2060 **Overseer of Carding** on cotton and purely white work. Thoroughly understands combing. Is familiar with most all kinds of machinery, both English and American.

2063 **Overseer of Carding.** Age 34; American; married. Worked mostly on yarns, combed and carded. Wants $3.50 or more, according to position.

2073 **Overseer Cotton Carding or Spinning** desires position. Age 47; American; married. Is familiar with all the modern makes of English and American machinery, revolving top flat cards, single and double carding.

2075 **Overseer Cotton Carding.** Age 35; married. 12 years' experience as overseer. Worked on all kinds of yarns from 10s to 150s, combed and carded, and is familiar with all makes of English and American machinery.

2082 **Carder and Spinner,** also twister, spooler and winder. Will go anywhere, but prefers New York state. Age 30; American. Shoddies and cotton mixes, camel hair, noils from 1 to 7 run for weaving or knitting.

WOOLEN SPINNERS.

1784 **Worsted Drawer and Spinner** Would take twisting. Age 2-; English; single. Can furnish references as to ability and character.

2040 **Overseer of Ring or Frame Spinning,** or would take superintendent position. Age 41; married.

2078 **Overseer of Spinning.** Fancy cassimeres, ladies' dress goods, overcoatings. Worked on both cheap and fine grades of woolen yarns. Davis & Furber mules and operators, Johnson & Bassett and Bancroit. Aged 28; American; married.

1987 **Overseer** of woolen spinning desires to make a change. Is familiar with suiting, union, cassimere, satinet and knitting yarns and all ordinary makes of machinery. 30 years of age; American; married. Good references as to character and ability.

1917 **Overseer Woolen Spinning.** Is thoroughly competent to take charge of a large spinning room. 38 years old; French; married. Has spun yarns for flannels, tweeds and knit goods, also cotton and wool mixes, shoddies; ranging in all from ⅛ to 14 runs. Is familiar with Davis & Furber, Johnson & Bassett, Platt and other makes. Very satisfactory references.

1709 **Worsted Spinner or Section** Hand. Age 22 and unmarried. At present employed, but not satisfied with surroundings. Would accept moderate pay

COTTON SPINNERS.

1960 **Overseer of Cone Winding** and spooling or ring spinning, who understands Universal, Foster, Broadbent and Payne winders, and Whitin and Mason frames, desires a position. Has worked on carded and combed yarns from 4s to 160s; also, mercerized, gassed and bleached yarns from 2 to 8 ply. Young man; American; married, and can give satisfactory references from large mills.

2003 **Overseer of Mule Spinning** who has had a wide experience in large New England mills on yarns ranging from 24s to 160s is open to a position. 37 years old; American. Good references.

1690 **Cotton Mule Spinner.** Age 42; French; married. Has worked on prints and sheetings and on yarns from 9's to 50's. First class references. Two years' experience as secondhand and five as overseer. Wants $2.50 per day to start with.

1519 **Overseer Spinning.** Age 31; American; married. Has worked on yarns from one run to 5¼. Will accept an average salary. At present employed, but wishes to better himself.

1950 **Second Hand on Mules.** Has had 20 years' experience on cotton mule spinning as mule fixer and second hand. Age 39, with family. Good references.

1986 **Overseer** of cotton spinning, who has worked on yarns ranging from 40s to 160s white and colored, is open to an engagement. Is familiar with Howard & Bullough, Saco & Pettee, Fales & Jenkes, and Lowell frames. 33 years old; American; married. Good references.

COTTON WEAVERS.

2034 **Overseer of Weaving** is open to a position. Age 33; American; married. White sheetings and drills. Mason, Whitin, Lowell and Knowles looms. Wants work in Western or Southern States. Experienced fixer and overseer.

1806 **Practical Boss Weaver** and loom fixer wants position. Good and long experience. Good record for big production; good quality and for being a good manager of help, and for getting and keeping plenty of good hands. A sober and steady man. Will go anywhere. Either cotton, woolen or jute.

2039 **Overseer of Weaving.** Has had charge of winding and warping and slashing. 18 years' experience in cotton mills, and can give the best of references as to ability. Worked in some of the best mills in the country as loom fixer, second-hand and overseer. Plain, leno and fancy goods.

2058 **Overseer of Weaving** or designing. Age 38; English. All kinds of cotton dress goods, also suitings. Both English and American machinery. Wants not less than $3.50 per day.

2016 **Overseer of Weaving.** Age 35; Scotch; married. Good experience, and excellent references. Crompton, Whitin, Lowell, Colvin, Woonsocket and English looms. Sheetings, lawns ginghams, flannels, fine worsteds, dress goods, shirtings and novelty goods.

WOOLEN WEAVERS.

1959 **Boss Weaver,** who is familiar with cotton, woolen and worsted looms, and all classes of goods, is open to a position in a large mill. 46 years of age; American; married. Strictly temperate and is recommended by some very large N. E. woolen and cotton mills.

1964 **Boss Weaver,** familiar with all makes of woolen and worsted machinery, and who has worked on ladies' dress goods and men's wear, desires a position. 39 years of age; American; married. Can give good references.

2051 **Overseer of Weaving** or designer. Age 29; American; married. Thibets, meltons, kerseys, worsteds and cotton worsteds. Crompton & Knowles looms. Good experience. First class recommendation.

2019 **Boss Weaver** or assistant designer. Wants position with a firm who is willing to advance a man as he proves himself worthy. 28 years old; married, and a steady worker. For past six years worked in all part of the weave room and pattern room, pattern weaving and dressing, chain building, harness raising, perching, fixing and regular weaving. Now taking course of study in woolen and worsted designing. Excellent reference.

2008 **Overseer of woolen** or worsted weaving. Would consider second hand or good fixing job. Age 37; married; American. Wants N. E. States. Worked on all classes of woolen and worsted goods, including paper makers' felts. All kinds of harness looms.

1536 **Boss Weaver or Superintendent.** Age 43; married; American. Can run any department in woolen mill, having been in business for himself. Not at present employed. Can take position immediately.

KNITTERS.

2056 **Machine Fixer** or foreman. Age 25; German; unmarried. Is familiar with Boss, Standard, Invincible, new Victor, Excelsior, Brinton, Branson, Scott & Williams, Paxton & O'Neill and all kinds of rib machinery. Can furnish references. $3 00 per day.

2036 Open to take the management and superintendency of a rib mill in one of the Southern states. Has had a large experience as a manager and the fitting up of mills. Can give the best of references as to ability, sobriety and character. Is familiar with all kinds of ribbed goods. 35 years of age; American; married.

2062 **Foreman of Knitting Room,** spring needle or flat knitting. Age 28. Fleeces of all kinds and gauges, balbriggan from 20 to 30 gauge, flat wool work all gauges. Is familiar with Tompkins Bros., Campbell & Clute and Crane machines.

2056 **Machine Fixer** or foreman. Age 25; German; unmarried. Is familiar, with Boss, Standard, Invincible, new Victor, Excelsior, Brinton, Branson, Scott & Williams, Paxton & O'Neill and all kinds of rib machinery.

2038 **Machine Fixer** or foreman is open to a position. Age 23; American. Will go anywhere, but prefers southern States. Silk and cotton half hose, misses' ribbed and ladies' hosiery. Is familiar with Standard B, Brinton, Branson, Scott & Williams knitters, also embroidery machines and several makes of sewing machines.

DESIGNERS.

1996 **Designer or Assistant Superintendent** desires a position. 27 years old; Scotch; married. Familiar with all well known makes of machinery and with woolen, worsted and cotton goods. Good references. Will go to any part of the United States. Terms reasonable.

1997 **A Young Man,** 23 years of age, English, would like a position as assistant designer or boss weaver. Has worked on woolen dress goods, cloakings, suitings and worsted suitings. Good references. Moderate wages. Three weavers in family.

2044 **Designer** in cotton or mixed goods is open to a position. Age 24; English; married. Almost all kinds of cotton goods, leno and lappet effects, colored work and weaves of all kinds from 3 harnesses up to and including jacquard work. Wants $3 50 to $4 per day to start.

1923 **Assistant Designer** on woolen or worsted dress goods and suitings is open to a position. Age 21; American; single. A graduate of one of the largest textile schools in the country, and has had experience in a good New England mill. Also understands flannels and satinets. Good references.

2085 **Designer** or asst. supt. Has attended the textile school in Germany. Good experience in every part of business, in dress goods and men's cloth. Has worked in the finishing and dyeing room. Full experience in all kinds of Jacquard designing.

2007 **Supt or Mill Manager** Age 27; single. Is practical in any department. Able to adjust loopers, ribbers, etc. From shipping clerk has had charge in turn, pressing and drying, looping, paring and packing departments. Has hired labor, made up new lines and bought some of the stock. Is familiar with office work.

Correspondence Instruction
In
Textile Manufacturing
Under Foremost Authorities
AMERICAN SCHOOL OF CORRESPONDENCE
Formerly of Boston, Mass., offers

Superintendents, Foremen, Second hands, Loom Fixers and all overseers or workers in textiles an opportunity to gain a thorough technical knowledge of **Textiles** for practical application.

Every Textile Salesman should have a practical knowledge of mill work, in order to **know why** his goods possess the right quality.

FULL COURSES IN
Cotton, Woolen and Worsted Spinning

SPECIAL COURSES IN

Cotton Spinning,
Woolen and Worsted Spinning and Knitting.
Warp Preparation and Knitting.
Woolen and Worsted Finishing.
Textile Design and Fabric Structure.
Textile Chemistry and Dyeing.

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COURSES ALSO OFFERED IN
Electrical, Mechanical, Stationary, Locomotive, Sanitary Engineering, and Mechanical Drawing.

All Engineering Instruction Under Members of Faculty of Armour Institute of Technology . . . .

As a help in their studies, students in full engineering courses are furnished, without extra charge, a Technical Reference Library (in ten volumes), in addition to their regular instruction books.

Textile Almanac, containing much information valuable to the textile workers, sent upon request.

AMERICAN SCHOOL OF CORRESPONDENCE,
AT
Armour Institute of Technology,
CHICAGO, ILL.

Mention Textile World.

1908 **Boss Dyer and Bleacher.** Age 23; American; single. Now employed, but will change for good job. Best of references from present employers.

2037 **Dyer** of any kind of carpet or rug yarns is open to a position. Been with one firm a number of years.

FINISHERS.

2004 **A Boss Finisher** of over 25 years' experience on fancy cassimeres, worsteds, dress goods, serges and a large variety of steam finished goods, beavers, kerseys, cloakings, meltons, cheviots, etc., is open to a position. 44 years old; American; married. Good references. Moderate terms.

2070 **Overseer of Finishing**, age 32; American. Woolen and worsteds, suitings, coatings, cloakings, cassimeres, cheviots, meltons, frieze, etc.

1870 **Foreman of Finishing** room, folding, packing, etc. Age 49; married; American. Has had over 12 years' experience as foreman on white goods in one of the largest bleacheries in the country. First-class manager of help and capable of getting good results.

2061 **Boss Finisher.** Would take good secondhand or wet finishing job. Age 41; English. All kinds of woolen and worsted goods, both steam and dry finish. Willing to go anywhere. Both English and American makes of machinery. Excellent references.

1990 **A Foreman** in Finishing room on all kinds of cotton piece goods. Accustomed to all kinds of folding, packing, etc., and machinery used therein. English, married, age 36. Five years in last situation. Has been in this country 12 years. Can give references from present and past employers.

2080 **Overseer of Finishing.** Age 30; American; married. Woolens, worsteds and cotton mixes. Prefers worsted mill.

DYERS.

2084 **Chemist or Colorist** in cotton or linen print works. Age 37. His practical work includes calico printing and dyeing; dyeing, bleaching and carding of loose cotton; dyeing and finishing of cotton, linen, jute, yarn and pieces for linings; waterproofing of canvas. First-class references.

2052 **Expert Hosiery Dyer.** Age 27; best of references, married and sober. Has had practical experience in dyeing one of the best aniline blacks and fast colors on cotton, wool, union and silk hosiery. Desires position as superintendent of dyeing in a first-class hosiery mill. One manufacturing high grade goods preferred.

2013 **Superintendent** of dyeing and finishing, or assistant manager of a woolen mill where dyeing and finishing is done. Can design. Age 41; English; unmarried. Worked on all classes of woolen and worsted goods, cotton linings, cotton velvets and plushes. To secure permanent position is willing to start for small salary.

2065 **First-Class Dyer**, Bleacher and Mercerizer is open to a position. Had a lifelong experience on cotton yarns' unions, merino, hosiery, underwear, tapes and braids. Would like to get a position in a dyehouse just starting, if possible. Is competent of erecting and equipping a modern dye plant.

2064 **Overseer of Dyeing** and finishing. Has worked on all kinds of piece dyeing, both cotton and wool, and all kinds of raw stock, dress goods, blankets and fancy cassimeres. Is familiar with Curtis & Marble, Parks & Woolson and Hunter fulling mills. Good references.

MISCELLANEOUS.

1803 **Roll Coverer.** I have done the work for a number of the largest cotton and worsted mills in this country, and am well known throughout the trade. Have been in the business 35 years, and can furnish stock and tools. Would be glad to take piece work, if shop is furnished, or would take a place by the day. Can furnish best of references.

2025 **Master Mechanic** wishes position in the North. 35 years old; married. Worked 15 years on repairs. Wants $3 50 per day. Has license for running engines and boilers. Understands all kinds of water wheels and care of same, dynamos and electric lights and also gas houses, and a good knowledge of building, all kinds of wood work and piping and blacksmithing Understands cotton mill repairs as good as thebest man at such work.

2029 **Overseer of Spooling,** warping, Twisting, reeling, coning in large mill, or spinning added to above in a 12,000 to 15 000 spindle mill, is open to a position. Age 31; Canadian; married. Excellent references.

2030 **Loom Fixer.** Age 43; American. Is familiar with Crompton & Knowles, Davis & Furber, either broad or narrow. Gilbert and Lewiston looms.

2045 **Colorist** and color mixer for all kinds of printing. Also understands plush printing and extract work. 10 years' experience. Can give references.

1980 **An Expert** on soap making and wool scouring will be open to a position shortly. Is familiar with the treatment of all grades. About 40 years old. English; married. Has worked for one concern in the United States for 12 years.

2071 **Foreman** or sewing machine repair man, age 32; American; married, is open to a position. Experience in drying, napoing, trimming, finishing and dressing of flat goods, also care of help and machines. Is familiar with Singer, Union Special, Willcox & Gibbs, Wheeler & Wilson, National and Union machines. Men's, ladies' and children's flat goods, fleece lined.

1905 **Sewing Machine Fixer** and machinist, age 25 years, is open to a position. Worked eight years at the business, and can take charge of all kinds of sewing machines and keep them in repair, used in finishing underwear, overalls, men's shirts, skirts, waists, wrappers, handkerchiefs, etc.

2068 **Assistant Supt.** Chief or Mechanical Engineer. Age 38. Technical graduate. 15 years' practical experience in cotton and flax mill repairs and equipment, well acquainted with cotton, flax, tow and jute machinery, and detail construction of same, also with the installation of power plants and power transmission. Would make a first-class mechanical superintendent. Best of references. Prefers New England.

1711 **Mill Engineer** and draftsman of experience, would like an engagement with a textile corporation, as above or in connection with some other responsible position.

From Second Hand to Overseer

When I enrolled in your School of Textiles I was working for the Greylock Mills, North Adams, Mass., as second hand. I am now overseer, at a much better salary, and my prospects are good for a position as superintendent. Before I had looked into the methods of your Schools I did not think they would help me; but after I enrolled I was so interested that I did sixteen lessons in eleven weeks, meanwhile working every day in the mill. Any textile worker can do as much.

THOS. F. SHEA,
435 Greylock, N. Adams, Mass.

The American School of Textiles of New Bedford, Mass., has been bought by the International Correspondence Schools. This means that the I. C. S. is now able to do for textile workers what it has done for thousands in other professions. We can train you during your spare time for advancement in your present profession, or enable you to change your occupation without loss of time from your present work. For full particulars fill out and send in the coupon TODAY.

International Correspondence Schools,
Box 860, Scranton, Pa.
Please explain how I can qualify for the position before which I have marked X

	Cotton Mill Supt.		Mech. Draftsman
	Ross Cotton Carder		Electrical Engineer
	Ross Cotton Spinner		Electrician
	Ross Cotton Weaver		Steam Engineer
	Woolen Mill Supt.		Surveyor
	Ross Woolen Carder		Architect
	Ross Woolen Weaver		Chemist
	Woolen Designer		To Speak French
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USEFUL BOOKS.

General Subjects—Cotton or Woolen.

Manual of Weave Construction, by *Ivo Kastanek*, Professor in the Royal Textile School at Brünn, Austria $1.50

Over five hundred illustrations of weave drafts and cloth patterns. Now in press. Ready in December. To those ordering now, the book will be sent promptly upon publication, with privilege of return if not satisfactory.

The foundation and derivative weaves for harness looms are systematically classified and explained. The work avoids all unnecessary words and goes directly to the kernel of the subject, bringing out the most important principles and selecting as examples of derivative weaves such as are applicable to the present state of the industry. It can be recommended for the expert, for schools and for self instruction in the composition of weaves. One of the most useful books ever published for the manufacturer, designer and weaver, whether cotton, woolen or worsted.

Dictionary of Dry Goods. *Cole* $3.50
Useful Fibre Plants of the World *Dodge* 1.50
Textile Fibres of Commerce *Hannon* 3.00
Textile Raw Materials, *Zipser* 5.00
Weave Lexicon for Harness Weaving. *Donat* 2.00
Mechanism of Weaving. *Fox* . 2.50

Calculations in Yarns and Fabrics. *Bradbury* 1.00
Jacquard Weaving and Designing. *Bell* 4.00
A New Industry or Raising Angora Goat for Profit *Black* 3.00
Drying by Mean of Air and Steam. *Hausbrand* 2.00
Color in Woven Design. *Beaumont* $7.50

On Cotton Manufacture.

Humidity in Cotton Spinning. *Dobson* $1.50
Draw Frames and Fly Frames. *Thornley* 3 00
Cotton. *Brooks* 3.00
Loom Fixing and Weaving. *Ivey* 1.25
Cotton Weaving. *Marsden* . . 3.00
Cotton Weaving and Designing. *Taylor* 2.50
Practical Carder. *Greer* . . . 1.00

Cotton Combing Machines. *Thornley* $3.00
Students Cotton Spinning. *Nasmith* 3.00
Cotton Manufacture. *Lister* . 3.00
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Cotton Spinning (3 vols.) *Taggart* 7.50
Plain Series of Cotton Spinning Calculations, *Cook* 1.00

On Woolen Manufacture.

Spinning Woolen and Worsted *McLaren* $1.50
Wool Spinning *Vickerman* . . 1.75
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Science of Color Mixing *Paterson* 3.00
Color Printing of Carpet Yarns *Paterson* 3.50
Manual of Dyeing (3 vols,) *Knecht, Rawson & Lowenthal* 15.00

Dyeing of Textile Fabrics *Hummell* $1.75
Wool Dyeing *Gardner* . . . 2.00
Bleaching of Linen and Cotton Yarns *Tailfer* 5.00
Bleaching and Calico Printing *Duer* 3.50
Printing of Textile Fabrics *Rothwell* 6.50

Any of the above sent postpaid on receipt of price. Subscribers to Textile World may order books from us with the privilege of examination, and if not satisfactory they may be returned within a few days (postage or express paid by purchaser,) if in good order.

GUILD & LORD, 95 South St., Boston, Mass.

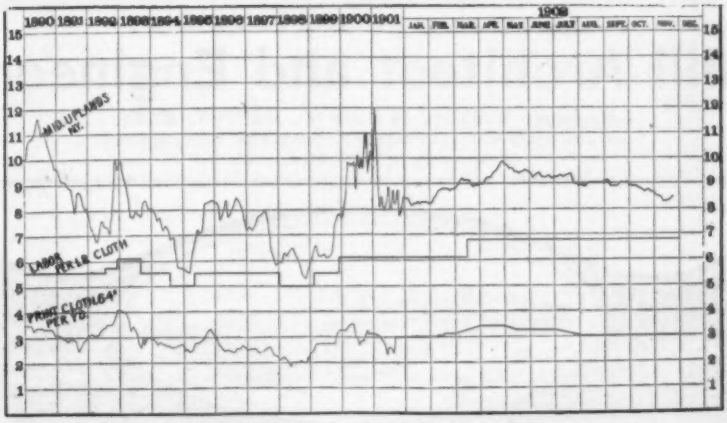

CHART SHOWING RANGE OF PRICE OF COTTON TO DATE.

The Cotton Market.

No wide fluctuations have occurred in the cotton market during the past month. The market has been strong owing to the small crop movement which has been below expectations. The effect of this has been chiefly evident in the speculative market. The usual crop of favorable and unfavorable weather reports from the South has been on hand to serve the purpose of speculators.

November closes with the market in a waiting state, as the government report is due and will be known by the time this issue is in the hands of our readers. The English market has been quiet and traders and consumers there have sought comfort in the reports of a bumper crop which has been freely circulated. Here, of course, the wish is father to the thought.

The world's visible supply Nov. 21 is estimated by the Chronicle at 3,196,297 bales as compared with 3,370,287 bales in 1901, 3,289,280 bales in 1900 and 4,039,481 bales in 1899.

Egyptian cotton has remained firm. Stoddard, Hasrick and Richards Co., under date of Nov. 22, issued an October report of crop conditions in Egypt to which they add: "Since this was issued, however, the situation has certainly not improved, and in point of fact our latest advices show a much more unsatisfactory condition than was anticipated. Our present estimate of the crop is 5,750,000 cantars. This in itself is sufficient to keep the market at a fairly high range of values, which is now quite expected. We quote today an advance of one-half cent on the week, and it is not likely the price can go much lower; even today buying is quite difficult.

Arrivals of medium grades are notably small for this time of the year and there can be no doubt that the top grades are defective, having especially suffered.

Bindings, Webs etc.
Spool Tapes and Stay Bindings.
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The RAVINE MILLS CO.,
MANUFACTURERS OF
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In white and colors on beams, tubes, or in skeins from uniform grade of extra staple cotton.
A specialty of Sewing Thread for woolen mills on Universal cones or tubes.
Vernon, Conn.

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Plans and Equipment of Cotton and other Textile Mills a specialty.

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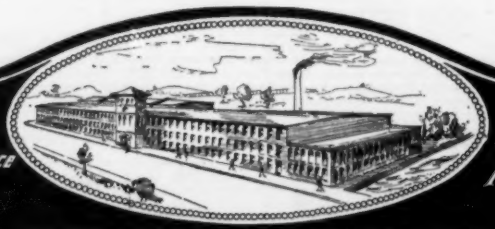

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RECONSTRUCTION OF POWER PLANTS

And General Textile Mill Construction,

HOLYOKE, MASS.

JOHN W. FERGUSON,

Builder and General Contractor.

MILL BUILDING A SPECIALTY.

References made to some of the largest mill owners in the Middle States, including Clark Thread Co., Newark, N. J., Barbour Flax Spinning Co., Paterson, N. J., and others.

253 Broadway, New York. *90 Washington St., Paterson, N. J.*

Telephone Connection.

KROUT & FITE MFG. CO.,

Manufacturers of

SILK and COTTON NARROW FABRICS

Spool Tapes a Specialty.

Office and Mill, Allegheny Ave. and Emerald St., PHILADELPHIA.

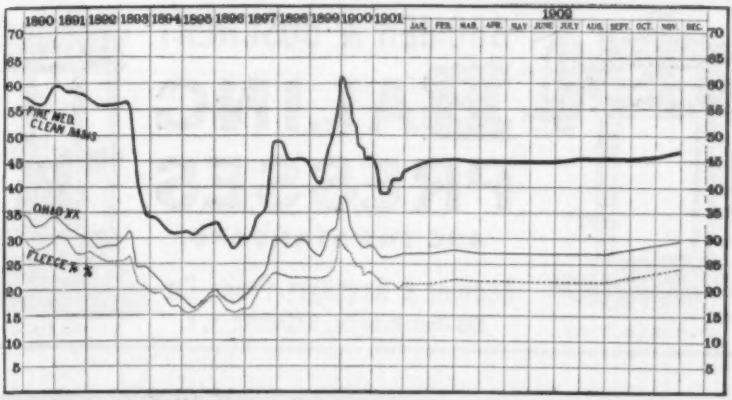

CHART SHOWING RANGES IN THE PRICE OF WOOL TO DATE.

The Wool Market.

A very good business at satisfactory prices has been transacted in this market since our last report. The sentiment is decidedly bullish and on every hand one meets with positive statements regarding the scarcity of wool. Unfortunately reliable statistics regarding the supply and consumption of stocks of wool are lacking. The published statements of stocks on hand are wholly unreliable. There is, however, strong evidence that the available supply of wool, both here and abroad, has recently decreased. Whether this is due to manipulation or to consumption by manufacturers is an open question. A prominent dealer in the Boston market showed the writer a large number of letters recently received from European wool centres in which the invariable statement was found that lots on which quotations had been asked were sold. In spite of the strong statistical basis of the staple there is a curious absence of speculators and the trade seems content to let the supply and demand work out their natural results. This sentiment is doubtless due in large part to the recollection of the boom a few years ago which caused so much havoc.

The mills are busy on light weights and are undoubtedly using large quantities of wool. It is expected that the opening of the heavy weight season will witness an advance in prices.

The advance in wool has already caused manufacturers to turn their attention to low grade samples. The advance in wages throughout the country has had a tendency to increase the purchasing power of the consumer, but this on the other hand is offset by the increasing cost of the necessaries of life which must be supplied before clothing is purchased. This should be borne in mind by manufacturers in their attempts to raise the price of heavy weight woolen goods. The past few years has demonstrated a fact that would seem to require no proof, namely, that a limited amount of money is available for the purchase of clothing; consequently when the price for clothing rises the demand is turned toward cheaper fabrics. Each individual can place the limit according to his own judgment, but it is probably not far from the fact that when the wool market rises above 50 cents for fine medium territory the use of so-called substitutes becomes of such volume as to materially restrict the consumption of wool and its further advance in price.

The foreign market is firm, an advance of 5 to 15 per cent. being reported on the opening of the London sales.

CROCHET LACE EDGINGS
TAPES—BRAIDS—THREADS
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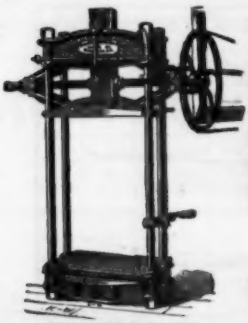
GEORGE W. CHAPIN,
YARNS Successors to FLEMING & CHAPIN. 229—CHURCH ST.—231 PHILA.

WEIMAR BROS., MANUFACTURERS OF
Silk, Cotton, Medium and Superfine, and Non-Elastic
BINDINGS.
Medium and Superfine Tapes a Specialty.
2046 Amber St., Philadelphia.



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ALL KINDS OF Spindles

USED IN THE MANUFACTURE OF COTTON, WOOL & SILK

IMPROVED UPRIGHT SPOOLERS

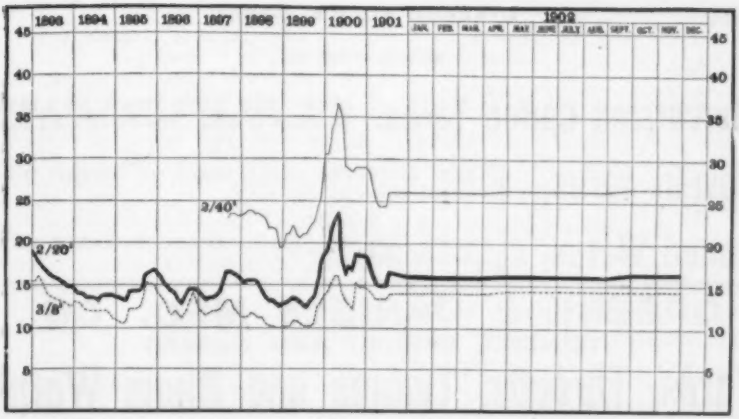
TO SPOOL FROM COP, SKEIN, OR BOBBIN.

Knitting and Weaving Yarns

Cones, Cops, Warps, Skeins,
Single, Double, Three-ply, etc.
Peeler, Egyptian, Mixed Colors.
Large Assortment.

EDWARD S. HYDE, 223 and 225 Chestnut Street, Philadelphia, Pa.

YARN DEPARTMENT.



GRAPHIC CHART SHOWING RANGE OF PRICE OF COTTON YARN TO DATE.

Cotton Yarn Market.

The slight decline in the price of raw cotton during the past month had a weakening effect on the yarn market, but this was only temporary although some dealers showed unnecessary fright and cut prices to an extent that was not warranted by the situation. The recovery in the price of raw cotton had a correspondingly good effect upon the price of yarn, and while the market has since remained somewhat irregular, there is no foundation for the alarmist reports that have been circulated in certain quarters.

Cotton yarn for immediate or quick delivery can be readily purchased at the quoted rates, but where the purchaser desires to make contracts for delivery far in the future he finds the spinner much more conservative and unwilling to speculate upon the uncertainties of the raw cotton market.

The current demand by both weavers and knitters is of moderate proportions and with original products restricted by spinners in the consumption of yarn there is no reason why the market should not still improve. Fine and medium counts are firm, the only perceptible weakness being in the price for the coarser grades, of which there are still fair stocks on hand offered for sale. We quote as follows:

Cops.

6s	15¼
8s	15½
10s	15¾
14s	16¾
16s	17½
22s	19
24s	20
26s	20¾
30s	22¼
34s	24¾
36s	25¾
40s	27¾

On cones, ¾c. more up to 14s; 1c. more from 15s to 22s; 1½c. from 23s to 35s, and 2c. above that.

Eastern Two-Ply Skeins, Carder Peeler.

12s	16½
14s	17
18s	18
20s	18½
22s	19
26s	20
28s	20½
30s	21
36s	23
40s	25
45s	27
50s	31
55s	34
60s	40

Eastern Two-Ply Warps, Carder Peeler.

2/30s	21-22
2/36s	23-24
2/40s	25-26
2/45s	27-28
2/50s	31-32
2/60s	40-41

Egyptian Weaving Yarns.
Single Skeins Combed.

30s	33-34
35s	35-36
40s	37-38
45s	39-40
50s	42-43
55s	45-46
60s	50-51
70s	59-60
80s	70-72
90s	74-75

Two and Three Ply Skeins, Combed.

20s	36-37
36s	38-39
40s	40-41
45s	42-43
50s	46-47

The J. R. MONTGOMERY CO.,

WINDSOR LOCKS, CONN.

Manufacturers of

Mercerized Cotton Yarns. GIVES THE HIGH SILK-LIKE LUSTRE IN KNIT GOODS AND WOVEN FABRICS

Novelty Yarns. BOUCLE, BOURETTE AND SPIRALS, IN COTTON, WOOL WORSTED, MOHAIR AND SILK.

Cotton Warps. ON BEAMS, JACK SPOOLS AND TUBES. IN FANCY TWIST COLORS AND PRINTED.

CREENE & DANIELS MFG. CO.,

COMBED, CARDED AND GASSED

Yarns, Threads, Twines and Chain Warps,

Colored and Bleached Yarns Furnished in any manner desired by the trade. **PAWTUCKET, R.I.**

MONUMENT MILLS,

Manufacturers of

White, Colored, Fancy and Double Twist

Cotton Warps

HOUSATONIC, MASS. 4s to 60s.

OIL SEEDS PRESSING COMPANY,

Manufacturers and Importers of

VEGETABLE OILS.

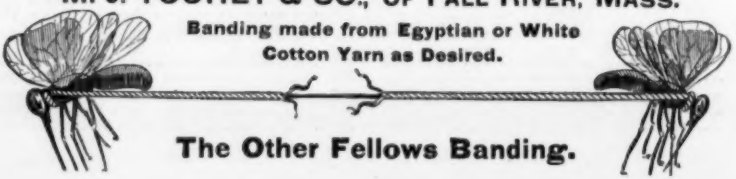
15 to 25 Whitehall Street, - - New York.

BALLOU YARN COMPANY, PROVIDENCE, R. I.

GASSED YARN, Harness and Seine Twines and other Job Gassing, Winding, &c. All Numbers. SPECIALTIES

M. J. TOOHEY & CO., OF FALL RIVER, MASS.

Banding made from Egyptian or White Cotton Yarn as Desired.



The Other Fellows Banding.

55s	49-50
60s	52-53
65s	56-57

Philadelphia Yarn Market.

The decline in cotton early in the month had a tendency to weaken the yarn market. Prices on weaving yarns declined while there was considerable softening in the prices of knitting yarns. However, there is a better feeling in the market at present and knitting yarns are firm at prices that prevailed before the market broke. Weaving yarns have also recovered most of the decline, there is a good demand for fine numbers of knitting yarns, and also two ply weaving yarns and the outlook for business is good.

Most of the Southern mills on knitting yarns have sold themselves up so close that there is considerable difficulty in getting full deliveries on old orders, or placing new orders for prompt shipment.

Stocks of yarn are comparatively low. This condition will help keep prices steady. In Egyptian yarn, especially in two ply, the conditions are good, and prices are firm.

We quote as follows:

7s and coarser	14½-15
8s and 9s	14¾-15¼

Southern frame cones (good quality):—

10s	15½
12s	16
14s	16½
16s	17
18s	17-17½
20s	17½-18
22s	18-18½
24s	18½-19
26s	19-19½
30s	20-21
40s	26
50s	32

Southern high grade mule yarn:—

Cones.

10s	16
12s	16½
14s	17
16s	17½
18s	18
20s and 22s	19-19½
24s	19½-20

Southern frame yarn, lower grades:—

6s and 8s	14½-14¾
10s	15-15½

Eastern cones (high grade quality):—

10s	16½
12s	17
14s	17½

RICHARD A. BLYTHE,
Commission Merchant,
Cotton Yarns of every description.
114 Chestnut Street, - PHILADELPHIA.

Buckingham, Paulson & Co.,
COMMISSION MERCHANTS.
COTTON YARNS of all Descriptions.
83 Leonard St., New York.
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Cash Advances, Cash Sales and Prompt Returns. Consignments and correspondence solicited,

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COMMISSION MERCHANTS.
COTTON YARNS
FOR ALL PURPOSES.
122-124 Chestnut St., PHILADELPHIA, PA.
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LINEN YARN IMPORTER.
Hughes Fawcett, 115 Franklin St., New York,
Flax, Hemp & Jute Line and Tow Yarns,
FOR WEAVING PURPOSES
Linen Jacquard Harness Twines.
Fine Cotton Harness and Heddle Twines.
For Cotton, Silk, Woolen and Carpet manufacturers. Correspondence solicited. Samples promptly furnished

J. S. DODDS,
346 Broadway, N. Y. Life Bl'd'g., New York, N.Y.

MERCERIZED YARNS
Two and Three Ply, for All Purposes,
In Peeler, Egyptian and Sea Island, gassed and ungassed, natural and dyed. Fast Black for cross dyeing a specialty.
Through H. A. CAESAR & CO.

A. D. SALKELD & BRO.
With
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MOELLER & LITTAUER,
IMPORTERS AND MANUFACTURERS OF
Silk, Worsted, Woolen, Cotton & Mohair Yarns and Tinsel. Chardonnet Artificial Silk.
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109 Green St, NEW YORK.

E. C. HARPER.
WORSTED AND WOOLEN YARNS,
MERCERIZED COTTON,
395 Broadway, New York.
Tel. 1828 Franklin.

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COTTON, WOOLEN, **YARNS** AND **BRAIDS** WORSTED, SPUN SILK.
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CAPACITY, 50,000 Spindles.

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FITCHBURG MASS.

COMBED OR CARDED

COTTON YARNS

In Chains and Skeins, on Balls, Beams, Spools—single or twisted.

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The "Drosophore" and "Vortex" Humidifiers.

Over 30,000 of our HUMIDIFIERS in operation.

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Write for our booklet "S" on humidification.

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DANA WARP MILLS

Westbrook, Maine.

WHITE AND COLORED WARPS,

6s to 50s—Single and Ply.

MULE COPS,

from 30s to 50s from

AMERICAN AND ECYPTIAN COTTON.

Indian Orchard Company.

Cotton Warps and Yarns, In Gray and all Colors, Single or two or more Ply, and Cable Cord.

Novelty Yarns, in Various Patterns, Colors and Twists.

Carded and Colored Cotton, For Mixing with wool, Machined or in Roving.

Indian Orchard, Mass.

E. MORGAN, PRES. H. K. WRIGHT, TREAS. W. C. GODFREY, AGT.

16s	18
18s	18½
20s and 22s	19-19½

Lower grades Eastern yarn:—

6s and 8s	14½-15
10s	15-15½

Rise ¼c. per number to 16s.

Besides this there is some comber waste used, that is made into 8s and 10s cones and sold at 14½ to 15.

Skein yarn (mostly Southern):—

4s to 6s soft	14-14¼
10s to 12s	14½
14s to 20s	15¼-16
22s	16-16¼
14/2	14½-15
16/2	15-15½
20/2	16
30/2	18½-19
40/2	24
16/3 slack	15½
12/3 slack	15
8/3 carpet	14-14½

Skein yarn (mostly Southern):—

8/3 slack	14-14½
9/4 slack	14-14½

Warps (mostly Southern):—

14s to 16s	15-15½
20s and 22s	15½-16
26s	16½-17
14/2	15-15½
16/2	15½-15¾
20/2	16-16¼
24/2	17½-18
30/2	19-19½
40/2	24

Mixed colored yarns (mock twist, half colors):—

6s to 10s	16-16½
12s to 14s	17-17½
16s to 18s	18-18½

Silver and jaeger, 1½ to 2s. over white.

Mock Egyptian, 3c. advance over white.

Egyptian, 4c. to 5c. above best quality white.

Worsted Yarn.

Spinners continue busy with orders which will last in some instances until Jan. 1, 1903, on fine yarns and until June 1, 1903, on coarse yarns. The spinners are not securing great orders on fine yarn, as the prevailing prices are beyond the reach of manufacturers, and while fine yarn is advancing in price, the cloth now being put on the market is being run down lower in grade with each advance.

The relative advance has, of course, been greater on coarse than on fine yarn, yet the cost of cloth made from quarter to three-eighths yarn to the consumer being much less than the finer cloth, the

WILLIAM B. CHARLES,
Cotton Yarns, Cotton Cloth, Silesia, Sateens
for the Underwear Trade.
Amsterdam, - N. Y.

CATLIN & CO.,
YARNS.
67 Chauncy St., Boston
216 Church St., New York.
306 Chestnut St., Philadelphia.

Walcott & Campbell Spinning Co.
FANCY HOSIERY YARNS
IN ALL COLORS.
New York Mill's, Oneida Co., - N. Y.

E. JENCKES MFG. CO.
Colored Cotton Hosiery Yarns, Double and Twist Yarns for the Weaving Trade.
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TUCKER & COOK MFG. CO
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WHITE AND COLORED COTTON **WARPS**
Nos. 6s to 30s,
On Beams, Jack Spools or in Chain
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COMBED AND CARDED COTTON.
YARNS 40s and above. AND
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COTTON, WORSTED, WOOLEN, MERINO AND FRENCH SPUN YARNS
Mercerized Cotton a Specialty
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EICHMANN & STERNBERG
530 Broadway cor. Spring St., NEW YORK.
Mercerized, Turkey Red, Gassed } Cotton Yarns.
Jacquard and Harness Twines.

C. MOORE & CO.,
MANUFACTURERS OF
TWINES, THREADS AND YARNS.
Jacquard Harness Twines of all kinds on hand and made to order.
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Philadelphia.

HOWLAND CROFT, SONS & CO.

LINDEN WORSTED MILLS.

Fine Worsted Yarns

OFFICE AND MILLS:

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Represented by FIRTH BROADHEAD,
937 Banigan Building, Providence, R. I.

ALLEGHENY WORSTED MILLS,

Thomas Wolstenholme, Sons & Co., MANFRS. OF

Worsted YARNS,

ALL NUMBERS SINGLE AND TWO-PLY,

Sell Direct,

on Cop or in Skein, for Weaving and Knitting Purposes, in White, Natural & Fancy Mixes

Office and Mills: Frankford Ave. and Westmoreland St., Phila., Pa.

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Worsted and Mohair Yarns — white or colors, in skeins, on spools, cones, or shuttle bobbins.

NOVELTY YARNS — of Mohair and Worsted. We are the only manufacturers in the United States making these yarns from the raw material to finished product and making Yarns **only.**

CENAPPED YARNS of all kinds. Doup Yarns. Harness Yarns. For Braids, etc.

...Dyers of Yarn and Slubbing...

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FRENCH SYSTEM. BRADFORD SYSTEM

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MANUFACTURERS OF

Worsted and Woolen Yarns

OFFICE AND MILL: Delaware and Cooper Streets. CAMDEN, N. J.

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MANUFACTURERS OF

Novelty Yarns, Silk Noil Yarns, in Fast Colors AND White.

Mills, Frankford, Pa. Office, 229 CHESTNUT ST., PHILA

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CLEANS WOOL, FLOORS ANYTHING.
INDIA ALKALI WORKS, Boston.

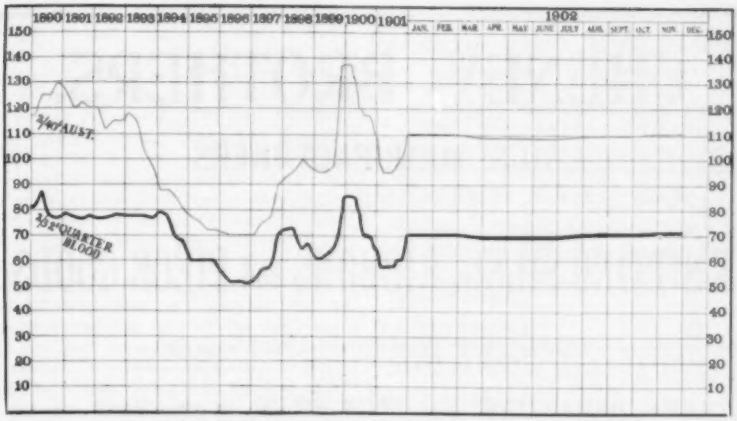

CHART SHOWING RANGES OF PRICE OF WORSTED YARN.

trade is demanding the cheaper article. Spinners are talking prices for fine double and twist 2/40s colored yarn that means $1.25 per pound. The weavers undoubtedly will have to use some of this yarn, but it will be used sparingly, because yarn at $1.25 per pound will make cloth cost $4.00 per yard. The reason the demand for this fine yarn will be reduced is because these double and twist yarns are being made in a coarser grade of yarn, so that cloth can be sold in the same styles at $2.00 per yard as against $4.00 per yard in the finer grade, and this is being done in all classes of goods.

Everything today is toward substitution, thereby reducing the cost or at least equalizing the cost to the consumer, and while fine yarn is being purchased sparingly, the 1/4 and 3/8 Blood yarn is being ordered, with delivery after January 1st, in large amounts. Spinners have practically cleared the market out of this class of wool. We know of one weaver, a conservative buyer, who has already placed orders for 100,000 lbs. 1/4 Blood yarn for future delivery, and this is but one instance in many. The substitution

SILK NOILS AND SILK NOIL YARNS
IN WHITE AND COLORS.
MOHAIR LOOPS, KNOTS, AND FANCY YARNS FOR DRESS GOODS AND CLOAKINGS.
A. T. SKERRY & CO., 47 LEONARD ST., NEW YORK.

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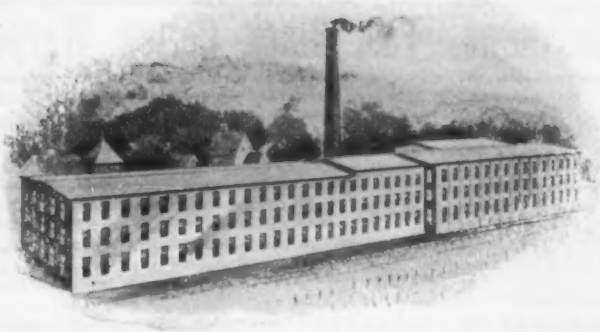
FLYER SPUN



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AND YARNS FOR WEAVING.
LUSTRE YARNS
FOR SERGE LININGS.
Worcester, Mass.

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SILK MANUFACTURERS.

——ALL KINDS OF——

KNITTING SILKS, RIBBONS and PIECE GOODS

USED FOR TRIMMING KNIT GOODS.

TRAMS, ORGANZINES and SPUN SILKS, in the Hank, or on Cones, for Manufacturers' use. Silk for Special Purposes Made to Order.

Mills: SOUTH MANCHESTER AND HARTFORD, CONN.

SALESROOMS: 477, 479 and 481 Broome Street, NEW YORK.
929 Chestnut Street, PHILADELPHIA.
79 Chauncy Street, BOSTON.
239 Fifth Avenue, CHICAGO.

WILLIAM RYLE & CO.,

DEALERS IN

Domestic Thrown Silk of every description. Fine Pure Dye Silks for the woolen trade a specialty. Foreign and domestic

SPUN SILK YARNS AND NOILS

Importers of European and Asiatic Raw Silk.

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"Matthews" Fast Black Cotton Warps.

Warranted fast to acid, fulling, cross-dyeing and light; even and rich in color.

Delivered on jack spools or section beams, all work guaranteed.

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Works, River St. Office, 94 Temple St.

Correspondence solicited.

FIRE HOSE CORDS { From long staple cotton—6s to 20s yarn in 2 to 100 ply—16 lbs. without a knot.

COTTON WARPS { On beams—single or ply yarns, grey, bleached or colored.

GLAZED YARNS { All plys—any color—for braiders, harness and sewing threads.

UNIVERSAL WIND { For braider cops—warp yarns—grey or colored—2 inch to 12 inch traverse.

Dyeing facilities are new and best quality work guaranteed.
We are prepared to dye yarns for other parties.

WHITTIER MILLS, Selling Office, Springfield, Mass.
Mill, Chattahoochee, Ga.

of other material than worsted began in the light weight season through which we have just passed. The filling yarn for these cloths was all made out of woolen spun yarn, while the only worsted yarn used was in the warps. This reduced the use of worsted 50 per cent., and it may be added that the use of woolen yarn in large quantities in light weight worsteds was never known until the present light weight season. It is stated that the fine goods mills are using large quantities of 3/8 Blood worsted yarn

The coming year may bring disappointment to those who are looking for a boom after January 1st. If the past two years are any criterion, it will be noted that manufacturers have been much misled as to actual conditions by the tactics of buyers in delaying orders. Manufacturers are forced to do the year's business in six months. The buyers delay purchases in large amounts until April, May or June. Before that time only sample pieces are placed. The result of this is that at the last of each season manufacturers are rushed with orders, and are misled as to the actual condition of affairs.

Instead of sizing the situation up correctly, with the realization of the fact that with the business evenly placed throughout the year, only a normal business would be shown, manufacturers only consider that at the time they are very busy, with spinners talking higher prices for yarn. The yarn buyers become panic stricken and buy in most instances much more yarn than is actually needed.

Weavers bought in this way last year and had it not been for the strike, whereby 50 per cent. of the machinery was stopped, the consequences would have been most disastrous. As it was, after they all got cooled down, yarn declined in price and many weavers canceled yarn orders where they could.

French spun yarns are in good demand and much percentage yarn is being sold. More cotton is being used in these yarns than has been the case in some time. Many of the French spinners are making double and twist yarn in quantities. The knitters are placing orders in quantities and are using lower quality of wool. This is very noticeable from the fact that certain manufacturers who previously purchased waste from these mills have been forced to abandon its use because of the lower grade of waste produced.

Much yarn is being sold by these mills for the manufacture of single yarn for piece dyes. The top manufacturers are busy on coarse work, but are slack to a certain extent on the finer grades, although the tendency is toward higher

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DEXTER YARN CO.
Cotton Yarns in Cops, Cones and Skeins; on Beams or Spools, Single and Twisted. Cable Cords and Twines.
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RICHARD CAMPION,
Selling Agent for—
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Highland Worsted Mills.
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YARNS.
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Speed & Stephenson,
WORSTED and WOOLEN
YARNS
A SPECIALTY.
ALSO TOPS.
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WOOLEN AND MERINO YARNS,
1 to 10 Runs, at reasonable prices.
All Wool, Mohair and Wool Spun or Mixed Cotton and Shoddy Yarns, in white, gray and colors.
Dress Goods Yarns a Specialty.
E. M. ROCKWELL,
Leominster, Mass.

J BROADBENT & SONS,
UNIONVILLE, CONN.
Woolen, Merino or Cotton Yarn by Woolen System. Single or two ply. Cones or Skeins Equipment first-class. Prices low. Custom work of any kind. Get our figures.

SHODDY WM. H. H. SLACK & BRO.,
Springfield, Vt.
Carbonized Stock a Specialty. **FLOCKS**

M. B. SCHWAB, Pres. H. RAWITSER, Treas. ED. GLUECK, Sec. and Gen. Mgr.
RIVERDALE WOOLEN COMPANY,
MANUFACTURERS OF
SHODDIES OF EVERY DESCRIPTION.
CAPACITY 7,000,000 POUNDS PER ANNUM.
CUSTOM CARBONIZING AND GARNETTING A SPECIALTY.
RIVERDALE, NORTHBRIDGE, MASS. New York Office: 140 Duane Street.

prices. The whole situation is summed up in the word "if," and this will only be solved by the way orders come in after the 15th of January.

If the orders are forthcoming from buyers of manufactured articles, the situation is a strong one.

We quote as follows:—

2/40s Australian	1.12½
2/40s XX Delaine	1.01½
2/40s Half Blood	1.00
2/20s Half Blood	.85
2/36s ⅜ Blood	.75
2/26s ¼ Blood	.68

Woolen Yarn.

Spinners are busy with orders which will run them until July. The business is general and comes from weavers and knitters. As wool advances manufacturers seek for substitutes and many weavers of worsted cloths are using large amounts of woolen yarn for filling in place of worsted yarn. So near is the demand to the supply that some spinners are forced to deliver yarn in 25 pound lots. The demand from the weaving trade for filling runs to fine counts.

The overcoating demand continues active and we know of one concern which has 4 or 5 outside spinners running on yarn. The eiderdown knitters are using large quantities of yarn and are trying to engage outside machinery. The rubber boot knitters continue busy with large contracts placed for yarn. The hosiery manufacturers, fearing an advance in wool after Jan. 15th, are placing orders at this time for future delivery. There are many mills which, after the first of the year are in need of yarn, but where they are to secure a supply is a problem which some of them will be forced to face.

Just at the present writing manufacturers are going slow, as they do not desire to place orders for delivery before January 1st, and this is causing a temporary let up in buying. The knitters generally are very busy and in many instances it is wholly a case of being able to deliver goods on time. The mills enjoying the greatest prosperity are the ribbed underwear mills and fine underwear in light weights.

The mills are resisting advances in material and yarn of all kinds, and in many instances have advanced prices but, notwithstanding the advance, there are agents trying to prevail upon manufacturers to make their goods cheaper. Said one of the largest knitters in New York State, "I have marked up my products and if the buyers of underwear cannot see their way to pay my prices, I cannot see my way to make the goods."

It is undoubtedly a fact that the underwear mills in general have but small stocks of yarn or material of any kind, and the larger ones realize the position and do not ask for concessions in the price of wool and yarn but place orders without much talk.

Rag and Shoddy Market.

A fair business has been transacted in this market since our last report, but prices have not changed materially. This

WE BUY FOR SPOT CASH any Kind or Quantity Jobs of Woolens and Dress Goods. Seconds, Remnants, Odds and Ends a Specialty. **Drop us a line and we will call.**
H. & D. FEINGOLD, 89 & 91 Bedford St., Boston, Mass.
Telephone, Oxford 1431-2.

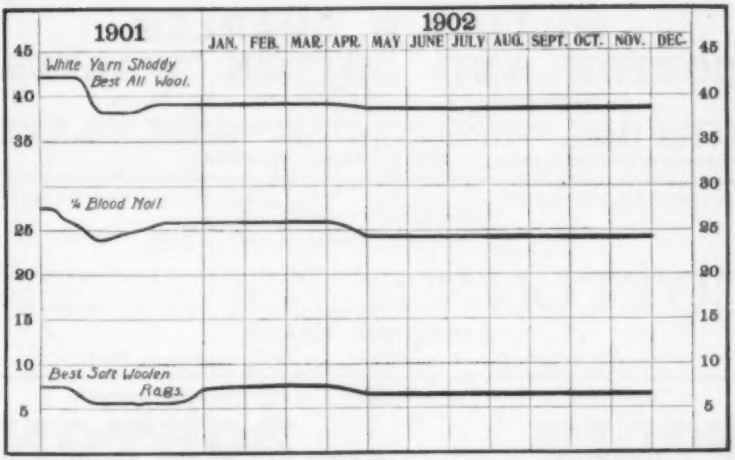

CHART SHOWING RANGE OF PRICES OF SHODDY, RAGS AND NOIL.

has been due to the firm refusal of the manufacturers to pay more than the current rates for stock. They take the stand that as there is no corresponding advance in goods, it is impossible for them to pay more for raw material and retain any margin of profit whatever on manufacturing.

The mills are busy, however, and have been forced to replenish stocks frequently. This has resulted in a fair volume of business. Extract manufacturers, unable to secure material advance for their product, have been met by the collectors with demands for an advance on rags. This demand has not been conceded, as a fair supply of nearly all grades has been in evidence.

Merinos have been scarce. Skirted stock, worsted clothing and stock woolens have also been among the strong features of the market. Satinet mills are very busy and making large inroads in the stock of the rag graders. Black worsteds can be obtained in only small quantities.

We quote as follows:

SHODDIES AND EXTRACTS.

White yarn, best all wool 38-40
White knit, all wool, best, fine 28-32
White knit, No. 2 23-25
Light yarn, extra fine 25-28
New pure indigo blue 23-25
Fine worsted, new black 26
New blue clip, best, fine 20-22
Dark mixed yarn, extra fine 22-24
All wool yarn, medium and coarse grades 15-20

Merino.

Fine light, all wool, No. 1 24-25
Medium light, all wool, No. 1 ....16½-17½
Medium light, all wool, No. 2 14-16
Fine black, all wool 20-22
Fine dark, all wool, best grade 19-20
Medium dark, all wool, No. 1 13-15
Medium dark, all wool, No. 2 12-13
Red knit stock, strictly all wool 19-20
Red flannel, all wool 19-20
Dark blue for hosiery, strictly all wool, No. 1 17-20
Dark blue for hosiery, not all wool, No. 2 12-14

DELAINE EXTRACTS.

Light 19-22
Medium light 15-17
Regular gray 12-13
Black 14-15
Fancy colors 16-20

WOOLEN RAGS.

Fine merchant tailors, all colors... 10½-12
Choice light colors 13-15
Browns 12-13
Blacks 9½-10½
Fine blues, plain 11-12
Fine dark 10-11
Medium dark 7-8

Worsteds.

Blue 16-18
Black 21-23

Serges.

New blue 16-17
New black 15-16

Flannels.

New scarlet 18½-22
New blue 17-18
Cloakings 3-4

SOFTS AND KNIT STOCK.

Soft woolens, best 7-7½
Old white flannels 14-16
White flannels, No. 2 11-12
Old red flannels 9½-10
Light blue flannels 7½-9
Old blue flannels 6-7
Old plaids 6-7
White Stockings 17-18
White hood stock 20-21
Clear hoods 9-10
Red stockings 9-10
Blue stockings 8-9
Fancy stockings, No. 1 7-9
Gray stockings 9-10
Black stockings 9-10
Knit stock comforters 6-7½
Red knit 9-10
Light gray knit 9-10
New light fancies 16-18
New fancies 12-14

Merinos.

Light, fine 15½-16
Light, coarse 8-8½

WILLIAM B. CHARLES,
COTTON AND COTTON WASTES.
AMSTERDAM, N. Y., U.S.A.

COTTON YARNS. **Contracts made with Cotton and Woolen Mills for Yearly Waste Production. Correspondence solicited.**
Shepperdson's Code, 1878. Cable Address "Charles."

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Established 1860—Incorporated 1893.

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COTTON Egyptian, Peruvian, **American Long Staple a Specialty.** Shipments direct to mill from Egypt, Peru and all American Southern Points.

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Cotton Waste Purchased on Yearly Contract from Mills.

YARNS

SOLIS : : BOSTON.

179 Devonshire Street.

ANDREW J. SOLIS, Jr. & CO.

Fine, dark	11-12½
Dark, No. 2	5-6½
Coarse dark	4-4½
Blue	10½-11½
Blue—seamed	14-15
Black—unseamed	11-12
New black	18-20
Small	3¼-4
Bunting	6-8

FLOCKS.

Shear, fine white, all wool	9-11
Fine indigo blue, all wool	9-9½
Fine black, and blue, all wool	7-8
Fine dark, all wool	5-6
Gig, fine, all wool	3-4
No. 1, black, all wool cut	6-7
All wool, fancy, shear and gig	2½-3½

COTTON WASTE.

No. 1 Spinners	7¾
No. 1 Machine	5-5½
No. 2 Machine	4½-5
Machine Cop	5½-6
No. 1 Cop	6
No. 1 Card	6-6¼
No. 2 Card	4
No. 1 Oily Card	3-3½
No. 2, Oily Card	2-2½
Egyptian Card	6¾-7
Peeler Combing	8-8¼
Egyptian Combing	7¾-8
No. 1 Linters	3½-4½
No. 2 Linters	3-3½
White Clips	5-5½
Colored Clips	2½-4½
No. 1 Picker	1¾-2½

NOILS.

Australian	48-50
Fine domestic	38-40
⅛ Blood	24-28
⅜ Blood	22-23
¼ Blood	17-19
Braid	21-22
Carpet (white)	14-18
Carpet (colored)	10-12½
Seedy.	
⅛ Blood	35-37
⅜ Blood	27-30
¼ Blood	23-26

Textile Patents.

(Continued on page 1079.)

Machine for the Manufacture of Lustrous Yarns. 713,360. Jean Stoerk, Brussels, and Georges Dubois, Tubize, Armand D. D'Asson, Brussels, said Stoerk and Dubois assignors to said Armand D'Asson.

Means for Automatically Changing Shuttle in Looms. 713,702. Alfred Smith and Simeon Jackson, Keighley, England.

Oscillating Lease Rod for Looms. 713,035. Henry Wilde, New London, Conn., assignor of one-half to Benjamin L. Armstrong, New London, Conn.

Process of Making Colored Designs on Textile Goods. 713,837. Arthur and Harry Barraclough, Halifax, England.

Process of Glossing Yarn. 713,936. James H. Ashwell, Nottingham, England.

Pattern Mechanism for Looms. 713,042. Clinton Alvord, Worcester, Mass., assignor to Crompton & Knowles Loom Works, Worcester, Mass.

Spinning Machine. 713,283. James Brown, Pawtucket, R. I.

Stocking. 712,941. Malcolm Lamond, Oakland, Cal.

Spotting Attachments for Carding Machine. 713,796. J. B. Platt and T. F. Marr, Ashland, N. H.

Spinning Spindle. 713,618. George Draper, Hopedale, Mass., assignor to Draper Co., Hopedale, Mass.

Warp Stop Motion for Looms. 713,610. John and Edward Cuniff, New Bedford, Mass., assignor American Mechanical Warp Stop Co., Pawtucket, R. I.

Warp Stop Motion for Looms. 714,090. Horace Wyman, Worcester, Mass., assignor to the Crompton and Knowles Loom Works, Worcester, Mass.

Yellow Sulphur Dye and Making Same. 712,747. A. Weinberg and O. Lange, Frankfort-on-the-Main, Germany, assignors to Leopold Cassella & Co., Frankfort-on-the-Main, Germany.

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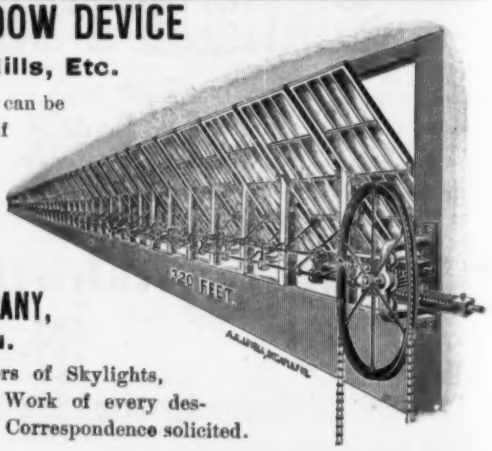
Adapted to any kind of sash Hinged, pivoted or sliding.



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A trial will convince.
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COTTON and PIECE GOODS In All Branches.

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Of Turkish Towels, Cotton Yarns, Underwear, Tapes and Hosiery.
Turkish Towels made up to suit the trade and shipped to any point.
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Charlotte Dye Works, Cotton, Woolen, Worsted, Hosiery.

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Of all classes of LINEN GOODS.
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Particular attention given to fast colors on cotton and worsted yarns, slubbing and stock dying.

Special black for the silk trade on fine cotton yarns.

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COTTON YARNS AND STOCKINET.

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Of Cotton Yarns in Long or Short Chain Warps and Skein, in FAST COLORS, FOR BLEACHING PURPOSES, Cross Dyeing, Ginghams, &c.

Also Dyers of Turkey Reds and Indigo Blues for all purposes in either Warp or Skein.

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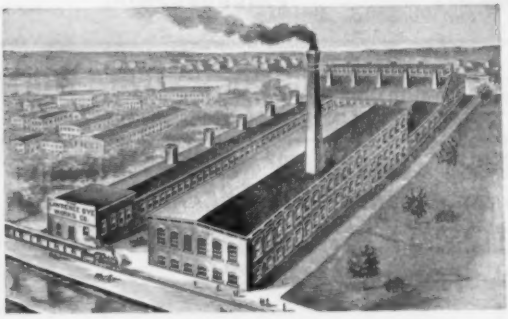

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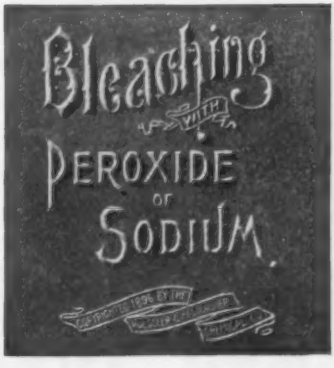

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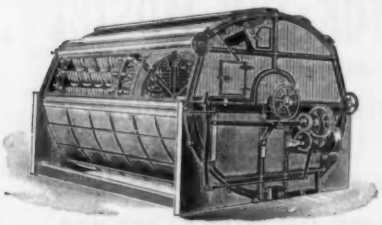

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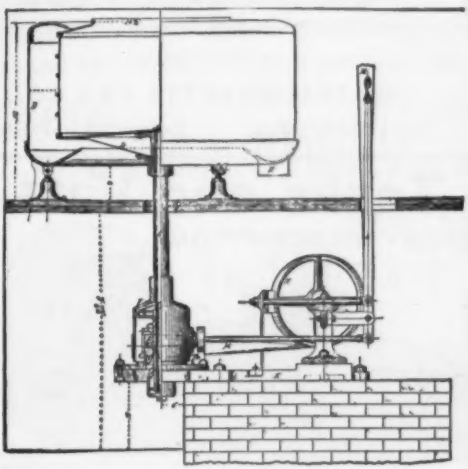

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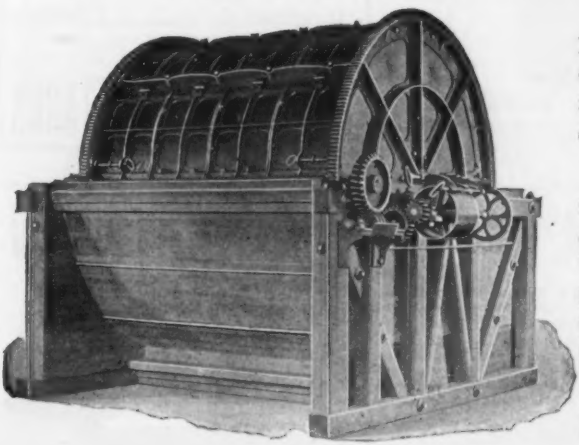

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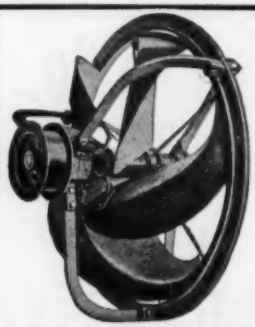

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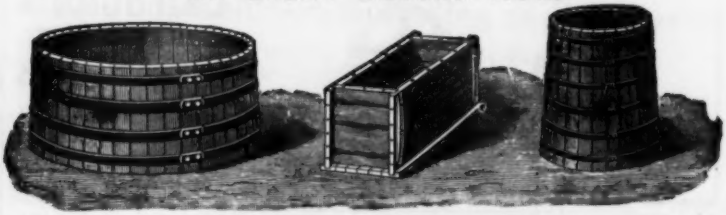

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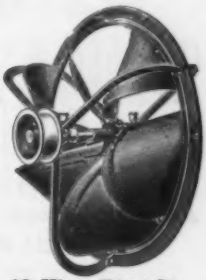

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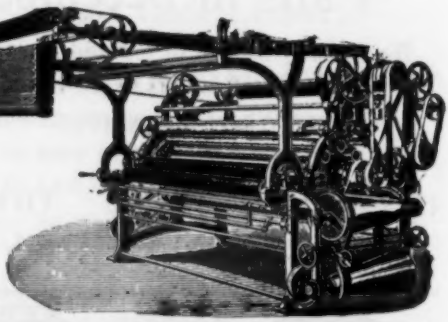

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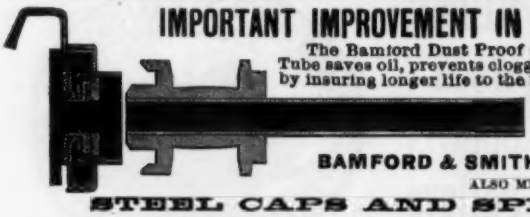

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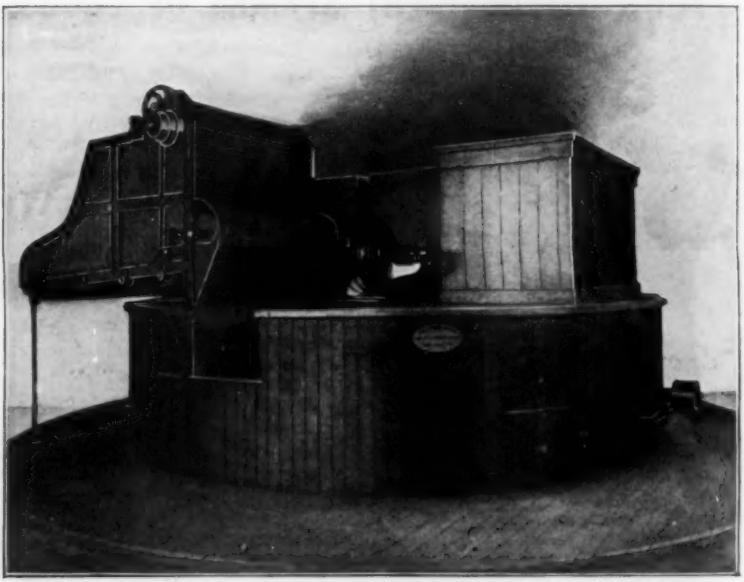

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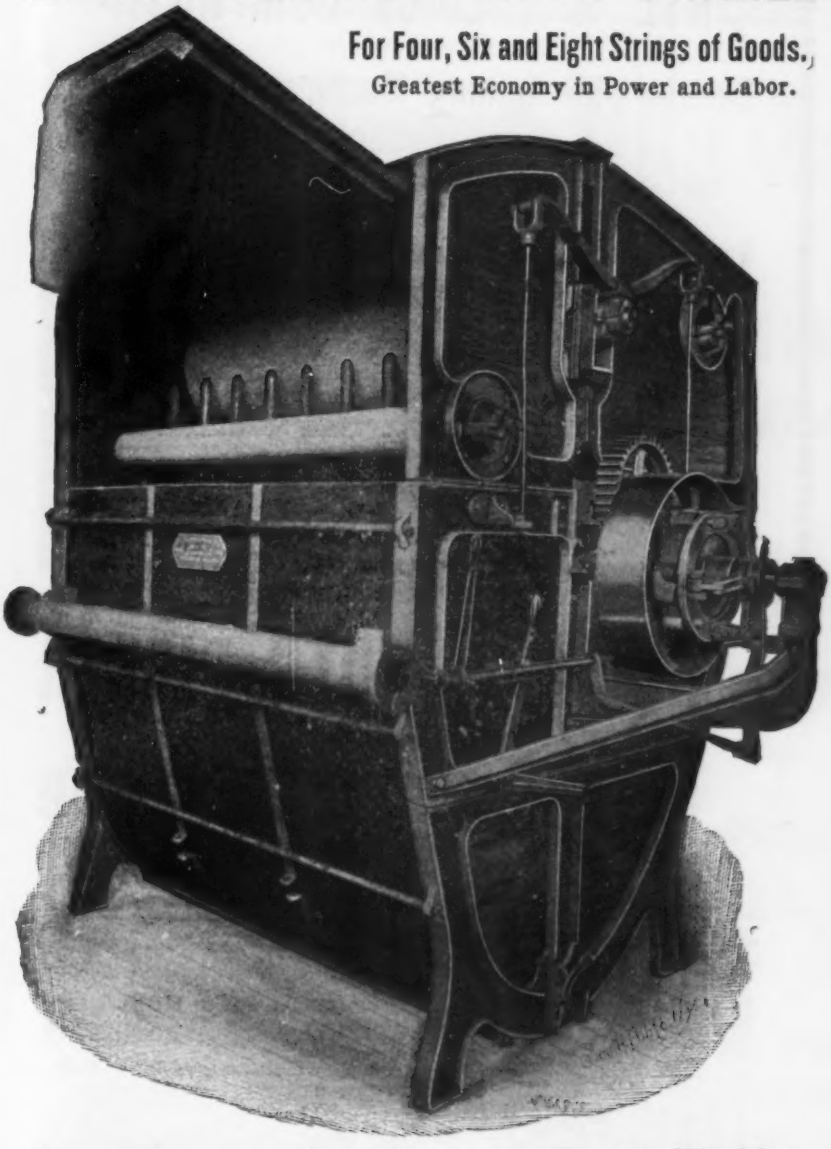

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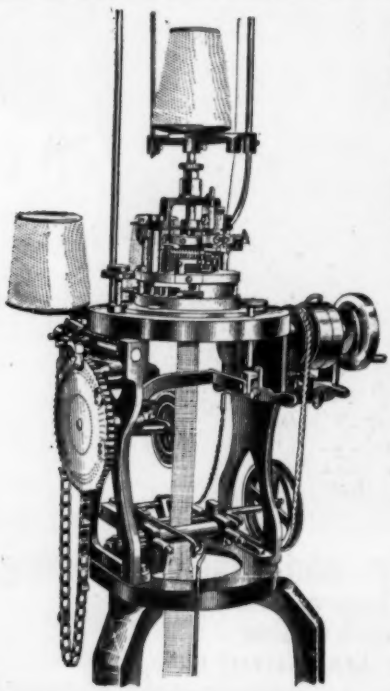

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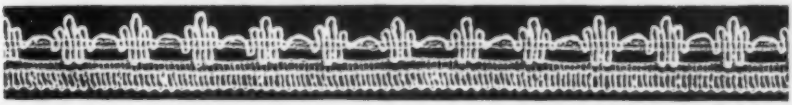

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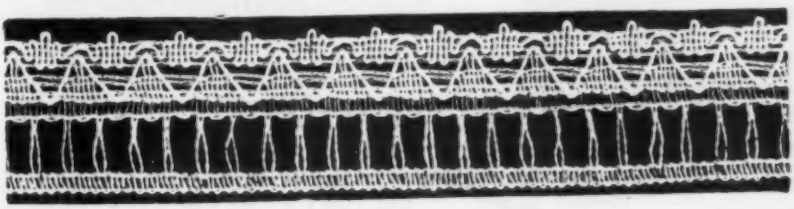

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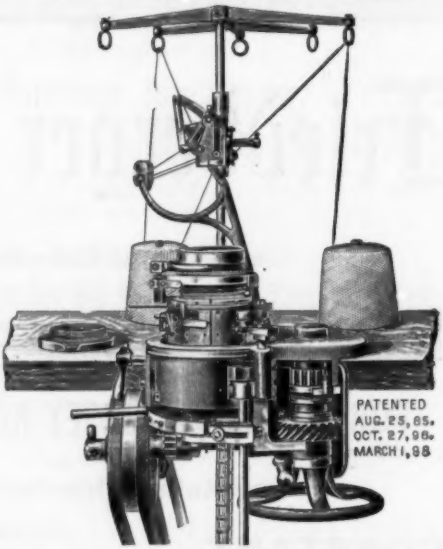
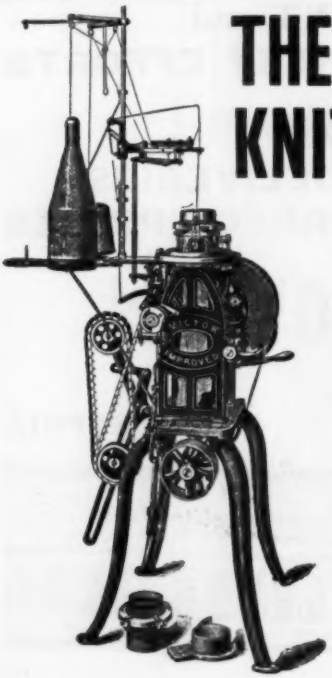


Factory and Main Office:
PAWTUCKET, R. I., U. S. A.
Branch Office, Room 370, Bourse Bldg., Phila., Pa



THE "NEW" VICTOR KNITTING MACHINE

A full Automatic Seamless Hosiery Machine. Thoroughly Interchangeable in all its parts. Automatic Two-color Striping Machine, also Black-Leg White-Foot Machine and Lace Machine.

American Knitting Machine Co.

Main Office, Room 5, Knickerbocker Building,
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PHILADELPHIA, - - PA.

Southern Branch, Charlotte, North Carolina.
R. M. Oates, Representative.

FACTORY AT WOONSOCKET, R. I.

JAMES TAYLOR,

835 Arch Street, - Philadelphia, Penn.

KNITTING MACHINERY

OF ALL KINDS. NEW AND SECOND HAND.

We are always in the market to buy good second hand Knitting and Finishing Machinery.

LATEST ARRIVALS:

7 Cornely Embroidery Machines.
3 U. S. Twin Needle Machines.
4 U. S. Trimmers.
2 McCreary Nappers.
2 Steam Hosiery Presses.
2 Hepworth 16 and 18 point Loopers, also coarser ones.
5 Hepworth Looper Trimmers.
1 Adams Auto. Rib Top Cutter.
12 Excelsior 7-8 Auto. 176n Knitters.
12 Scott & Williams 7-8 Auto. 136n Knitters.
3 Brinton Sleevers, latest style, like new.
Plant Champion Ribbed Underwear Machines, latest style, like new.
Plant N. & T. Ribbed Underwear Machines.

WRITE FOR COMPLETE LIST.

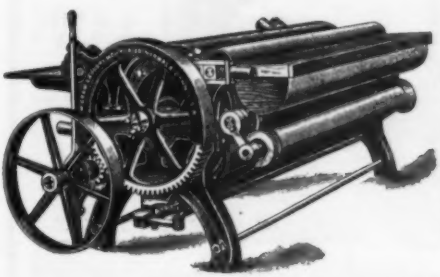
CIRCULAR RIB KNITTING MACHINES,

Carefully designed and well made with Solid Forged Steel Cylinderr and Dials, Segmental Cam Rings, Encased Take-up, Stop Motions, etc. Standard Sizes, Reasonable Prices. Also

KNITTING MACHINE CYLINDERS AND DIALS.

STAFFORD & HOLT. - Little Falls, N. Y

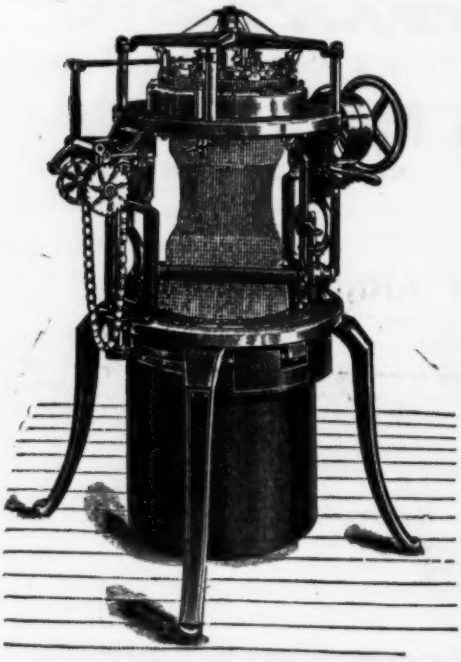
AUTOMATIC IRONING AND PRESSING MACHINE FOR KNIT GOODS.



This machine irons and presses ribbed and flat underwear, giving a fine smooth finish and most attractive appearance to the goods, not to be obtained in any other way. It does not break buttons. Inexpensive and easy to operate, and has large capacity. Knitting mills using them are greatly pleased with results. This method of finishing is sure to come into universal use. Send for further particulars to

J. W. CRAW LAUNDRY MACHINERY CO.,

SOUTH NORWALK, CONN.



McMICHAEL & WILDMAN

MFG. CO.

RIB KNITTING MACHINERY,

AUTOMATIC AND PLAIN,

For all classes of Ribbed Hosiery and Underwear, Combination Suits Sweaters, etc.

ESTABLISHED REPUTATION FOR

Largest Production, Best Quality Fabric, Durability, Economy of Operation.

Full particulars, Description and Samples furnished upon Application to the

McMICHAEL & WILDMAN MFG. CO.

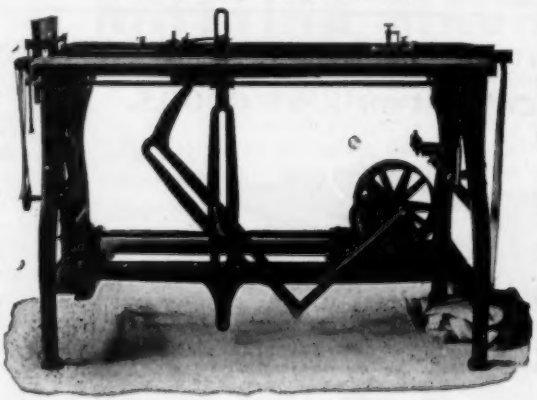
NORRISTOWN. PENNA

Adams Rib and Top Cutting Machine

FULLY AUTOMATIC.

Cuts all Fabrics with or without Welts. Perfect Clean Work. Requires no Trimming after passing through machine.

Solidity. Simplicity. Absolute Positive Movements. Best Materials.



Cutting and Working Parts Hardened Steel. Easy Running.

Saving of Labor and Goo , 00 Dozen Cuts per Da by one Operator. False Welts cut out automatically. Can be operated by a boy or girl. Accid nts impossible. No Special Attachments. Patented in the U. S. A., Europe and America.

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PAXTON & O'NEILL'S

3-4 Automatic Knitter

FOR ALL KINDS AND GAUGES OF SEAMLESS HOSIERY.

Has the preference wherever used over 7-8 and full automatics. Because it makes as much or more goods and better goods. Costs less for repairs. Gives less trouble to fixers Range on Half Hose, from the coarsest to 220 needle.

Exclusive rights to Brown's ATTACHMENTS FOR LACE EFFECT.

127 Bread Street, Phila.

Cylinders and Dials for all size machines.

THE LAMB

LEADER OF KNITTERS

ORIGINAL and BEST
PARTS INTERCHANGABLE
EASILY and QUICKLY OBTAINED

Hosiery and Sweater
Cardigan Jacket
Automatic Racked Border
Full Fashioned Union Suit

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WRITE FOR CATALOGUE.

BANDS, BUTTON STAYS, FACINGS, Etc.,

can be made correctly only on the

KENNEDY UNIVERSAL

Automatic Band Folding and Cutting Machine.

ACCURACY, SPEED, DURABILITY.

THOS. KENNEDY, Cohoes, N.Y.

Our New Improved Light-Running Short Carriage

KNITTING MACHINE

unsurpassed for full-fashioned Sweaters, Jackets, Leggins, regular Knit Underwear, Union Suits, and all other *regular* and *selvage* Knit Garments Made with 2 complete yarn-carriers and 2 color striping attachment and has the new combined Sweater Stitch Drop Lock and Tubular Lock. Special Glove Machines. Finger Knitting Machines 3 inches width of needle bed. Rapid 2-thread Lock stitch Overseamers.

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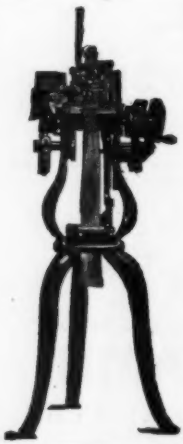


PEPPER MACHINE WORKS

LAKEPORT, N. H.

Successors to PEPPER MANUFACTURING CO.

MANUFACTURERS OF

KNITTING MACHINERY,

INCLUDING

Pepper's Flat Ribbed Cuff Machines,

Automatic Welt and Loose Course Machines for Stock Tops. New Circular Stripers with Welt, Loose Course and Striping (Automatic), for Short Cuffs, Sock Tops, Hose Legs, Wristers, etc.

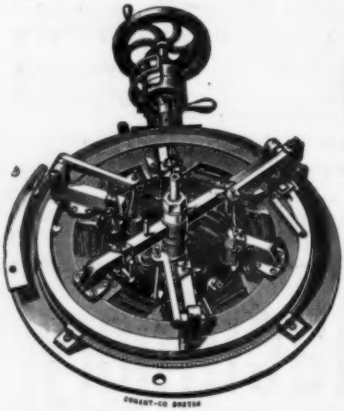
GOLF AND BICYCLE STOCKING MACHINES,

ALL KINDS OF

CIRCULAR RIBBED MACHINES,

For Men's Underwear, Ladies' and Misses' Hose Legs and Leggins.

CORRESPONDENCE SOLICITED.



CIRCULAR

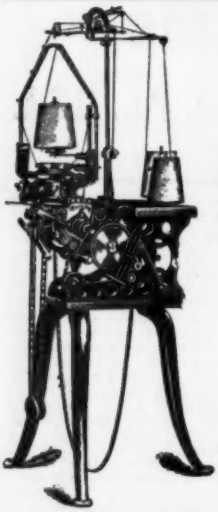
KNITTING MACHINES

Either plain or full automatic, with stop motion complete, for

RIBBED UNDERWEAR,
SWEATERS,
CARDIGANS,
CUFFS and ANKLETS.

The Leighton Circular Machines are the only ones which **Rack** or **Shog** the needles for fancy borders; also built for automatic striping; and with from 4 to 16 feeds for underwear.

Leighton Machine Co., Manchester, N. H



Excelsior Knitting Machine Manufacturing Co.,

BUILDERS OF

Knitting Machinery

Two-Feed 7-8 Automatic for Ladies String Work, also Black Legs with White Feet.

Regular 7-8 Automatic for all classes of Cotton Hose. Special 3-4 Automatic for Wool.

Excelsior Knitting Machine Mfg. Co.

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H. BRINTON & CO.,

213-215 Race Street,
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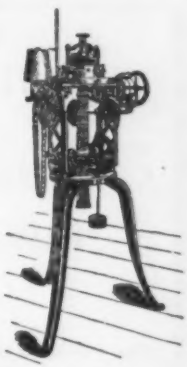
BUILDERS OF

Full Automatic Seamless and Ribbed Knitting Machinery.



LACINGS For Overshirts and Underwear.

Tipped and Tasseled.

HEPNER & HORWITZ. 30 Howard St. N.Y.

Celebrated Brand PYRAMID TRADE MARK Lacings

For Underwear, Overshirts and Sweaters,

JOHN CATHCART & CO.,
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GERMAN KNITTING MACHINERY

—FOR—

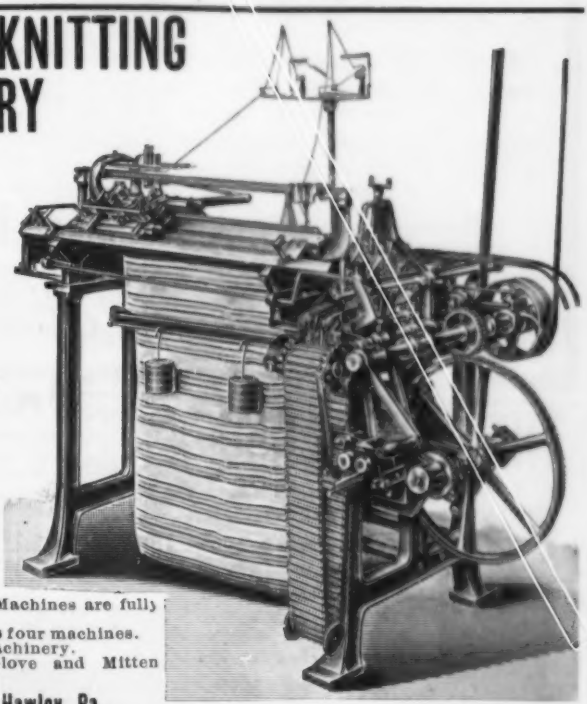
Fancy and Full Fashioned Goods.

Our Specialties are for Machines for Knitting

Sweaters, Golf Jackets, Fancy Vests, etc.

—IN—

Plain, Honeycombed and Other Fancy Stitches.



Our Steam Power Machines are fully Automatic.
One operator attends four machines.
Also Hand Power Machinery.
Also Underwear, Glove and Mitten Machinery.

E. H. LUDWIG, Hawley, Pa.

The "RECORD"

is the latest improved full automatic knitting machine (combined Cotton and flat) for

FULL FASHIONED HOSIERY

with double heel.

The "RECORD" operates upon an entirely new principle.

The "RECORD" runs 100 turns per minute.

The "Record" produces a fabric with a stitch of absolute regularity.

The "Record" narrows automatically upon a new principle.

The "Record" breaks no needles.

The "Record" finishes the flat circular work with a double heel fashioned on the machine without any hand work before or after.

The "RECORD" turns out a heretofore unknown daily production.

The "RECORD" has needle plates of fine gauges with clock-spring steel ribs, which are removable and exchangeable.

The "RECORD" handles the most tender yarn.

The "RECORD" knits automatically any desired fashioned articles, besides hosiery.

The "RECORD" is built with 2, 4, 6, 8, 10 or 12 heads working together (combined.)

The class of goods made on these machines is in great demand and shows a good profit. Write for further particulars and prices.

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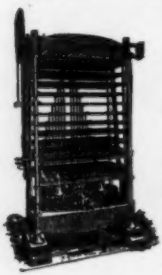
THE CRAWFORD

HOLLOW STEAM

Plate Press



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The most reliable machine of the kind on the market.

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Successors to

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GAS ENGINES for city or country. | EFFICIENT

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KNITTING MACHINERY | LOW IN PRICE.

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SOLE MANUFACTURER OF THE

CHAMPION HOSIERY STAMP.

PATENTED JANUARY 7, 1896

The only Perfect Stamp for Hosiery, Underwear and all Woven Fabrics.

Blocks for Printing Hosiery.

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THE CHEAPEST and BEST METHOD

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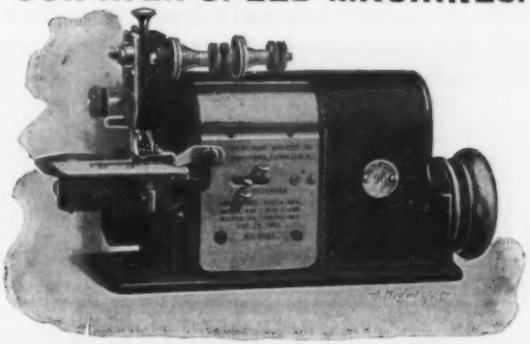
FINISHING RIBBED KNIT GOODS

IS BY THE USE OF

OUR HIGH SPEED MACHINES.



BLANKETS, SKIRTS or COTTON GOODS,

requiring a useful and Ornamental Finish, should be finished by some of our various machines adapted for special purposes and finishes.

Send for Catalogue and Samples, stating the kind of goods to be finished.

THE MERROW MACHINE CO.,

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RILEY'S PATENT RIGGING CUTTING FOLDING **MACHINES**

For all kinds of Gray or Finished Stuffs, Woolens, Worsteds, etc.

CHAS. A. JOHNSON & CO. SOLE AMERICAN AGENTS.

New York and Providence.

CRANE MFG CO

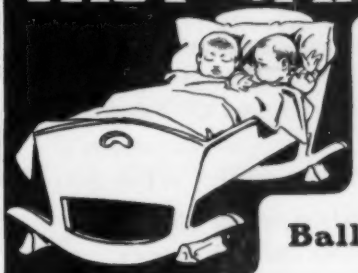
LAKEPORT, N. H.

Spring Needle Circular Knitting Machine

For Hosiery, Shirts, Drawers, Jersey Cloth and Stockinet.

A Specialty of Hardened Bladed Burr Wheels with Self-Oiling Brackets.

THEY CANNOT ROCK



Heavily Loaded Baskets

Are apt to rock or sway, especially when being transported. This side motion will quickly wear out any basket.

Ballou Canvas Baskets

Cannot rock.

Made of strongest Canvas over a frame of Flat Spring Steel and Rock Elm. They could not be more rigid. They cannot sway, even when wet or in continuous use for a long time. They are practically indestructible.

Cost Least—Wear Longest. Our Booklet tells the story.

Ballou Basket Works, Belding, Mich.

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Business est. in 1859.

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"OVERLOCK" MACHINE.

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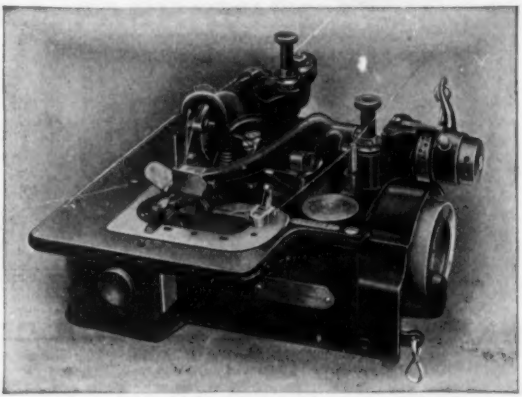
(Patent twice upheld by U. S. Court of Appeals.)

For TRIMMING, SEAMING, and OVEREDGING (or HEMMING) KNIT UNDERWEAR.

3,000 STITCHES PER MINUTE

12 to 20 STITCHES PER INCH



The "Overlock" Elastic Stitch is equal to the full stretch of the Goods

WILLCOX & GIBBS SEWING MACHINE CO.,
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THE ARNOLD SEWING MACHINE CO.

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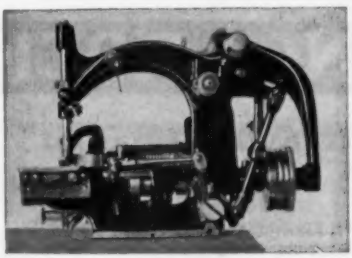

Overedge Welting Machine, with Trimmer.
The very best in the market.
(No royalty.)

Overedge Seaming Machine, with Trimmer.
3000 stitches per minute.
(No royalty.)

Overedge Sewing Machine, without Trimmer.
For manufacturers of knit goods and other fabrics, with or without trimmers.

Our claims are SIMPLICITY,
DURABILITY,
ACCESSIBILITY,

Every part of our machine being readily accessible.
This machine has 100 less parts than any other overedge machine.

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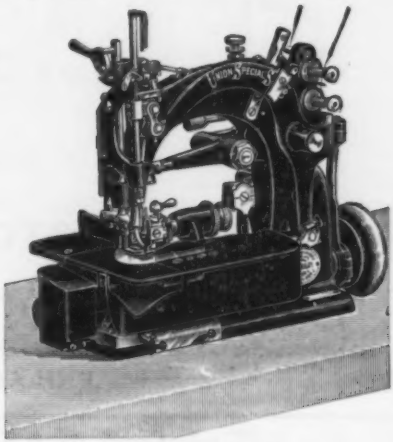
SINGLE "INTERLOCK" MACHINES

(TRADE MARK.)

With Trimmer, for Underwear and Hosiery, Overedging, Hemming and Seaming.

Elastic Seam,
High Speed,
Durable,
Simple,
No Royalty.



Send for Samples of its Work.

For Underwear.

Special Machine for Hosiery.

Better Work,
Uniform,
Width of Hem,
Only Machine
Having Horn.

More Work,
Easier to Operate,
Raw Edge Covered.

For Hosiery.

Union Special Sewing Machine Co.

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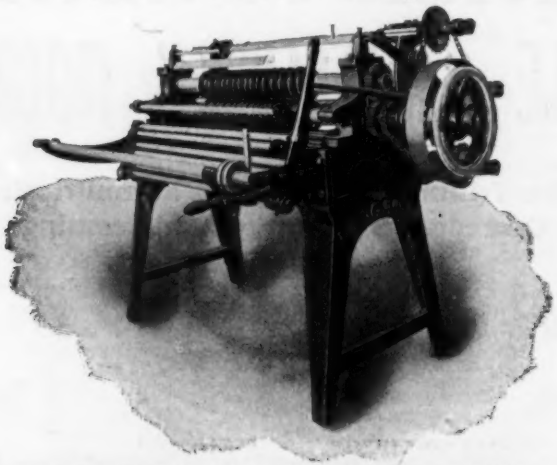

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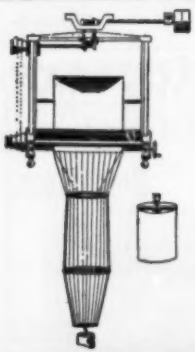
Supplies complete Outfits for Knit Goods Manufacturers.

501 Locust Street, - - PHILADELPHIA, PA.

Correspondence solicited.



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My Vertical Dryer is conceded to be the best by Practical Mill Supts. who have seen and used them. A large Dyeing Co. after using a number of them and also trying other makes have given a duplicate order for a number more, saying their customers want their goods stretched and rolled in these dryers. Mills that consult their own best interests look up these dryers before they buy.

Sole Owner and Manufacturer **E. M. ANTISDEL,**

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(Adv. changed every month.)

BOARDS FOR FAST BLACK DYERS.

HOSIERY FINISHING BOARDS.

BEST WORK. PROMPT SERVICE. PRICES ALWAYS RIGHT.

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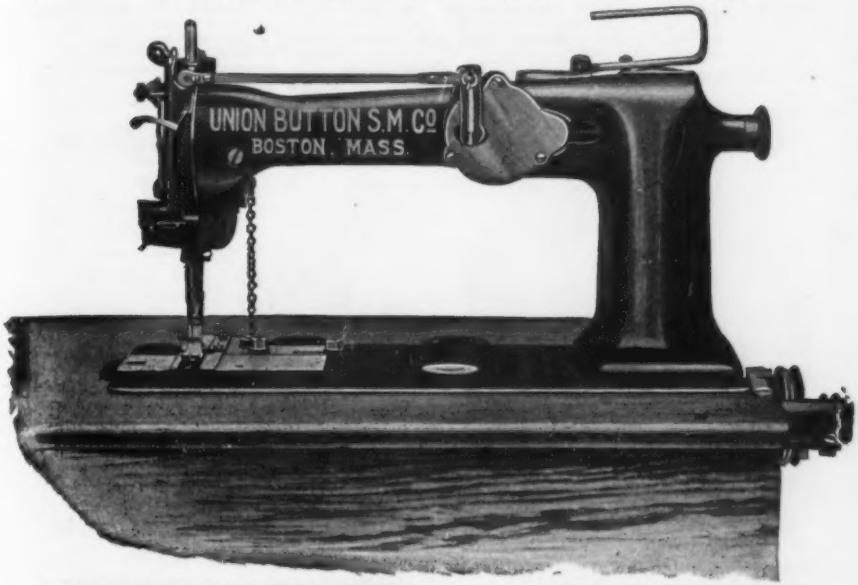
Our New Drawer Strapping Machine

SHOWN BELOW, will sew on straps of any width and thickness, makes either wide or narrow stitching across the straps and will also **BAR** each end of the stitching.



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Superior Locations for all kinds of Textile Mills

May be had at points on Southern Railway

Steady and remarkable success has attended the mills located on the Southern. It is the great Textile Line of the South. Mill Men and Mill Investors should investigate the advantages our districts afford.

We have now a number of excellent points for new Cotton Mills, or for Knitting Mills, where local capital will join with that from the North in new enterprises. If you are interested, write us.

M. V. RICHARDS,
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Especially Attractive

Are some of the openings that exist in the section of the South and Southwest traversed by the lines of the

FRISCO SYSTEM

We enumerate a few of the many excellent openings:—

A large deposit of salt of high grade awaits development; a certain city offers fine inducements for a cotton mill; another town would be an excellent location for a woodworking plant owing to abundance of very cheap raw material; another place has large quantities of cheap natural gas as fuel for factories. And in like manner we could enumerate many others.

We are certain that we can fill your wants in the way of a location and can be of service in locating you at just the RIGHT place. Address,

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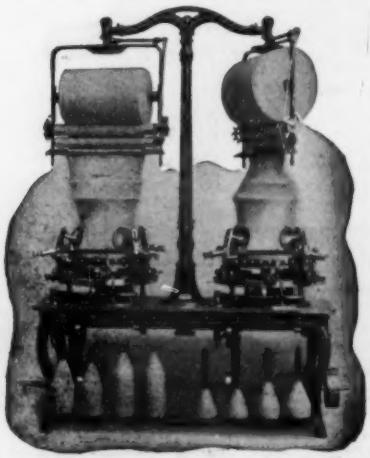
KNITTING MACHINE AND NEEDLE WORKS,

MANUFACTURER OF

Flat Rib Knitting Machines, 2 to 5 sections, Spring and Latch Knitting Needles, Burr Wheels, Burr Blades, Collarette Attachments, etc., etc. All the latest improvements. Sinkers and all Rib Machinery supplies. Patent Springs for Dyeing Boards.
Also Ribbed Anklets made to order. Branch Shop, AMSTERDAM, N.Y.



TOMPKINS BROS. Troy, N.Y.
Knitters, Winders, Burrs, Attachments.

CIRCULAR AUTOMATIC

RIB KNITTING MACHINERY FOR

Combination Suits,
Sweaters,
Richelieu Ribs,
Cuffs,
Ribbed Shirts,
Shaped Swiss Ribs,
Rib Tails, etc.

Over 1200 machines now in operation.

Also manufacturers of **COP WINDERS.**

The HOMER P. SNYDER MFG. CO.,
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Striping Attachments
FOR
Latch and Spring Needle Knitting Machines.

These Stripers are being rapidly adopted by representative mills, among whom may be mentioned:

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BABCOCK MACHINE WORKS,
Fort Plain, N. Y.

BEATTIES'
Patent Loopers.

Wm. Beattie & Son,
COHOES, N. Y.
An Illustrated Catalogue will be sent on application

We make the best in
QUALITY
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HOSIERY BANDS AND LABELS

We carry all the "Specials."

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Manufacturers of Knitting Machine
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PACE NEEDLE CO.,
Manufacturers of
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of all kinds. Warranted in every respect.
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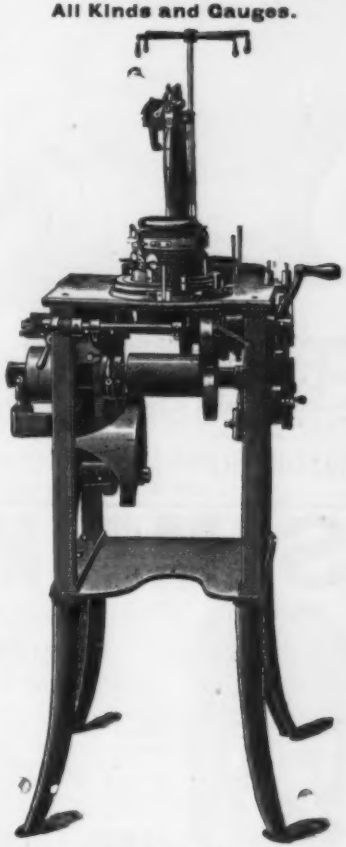

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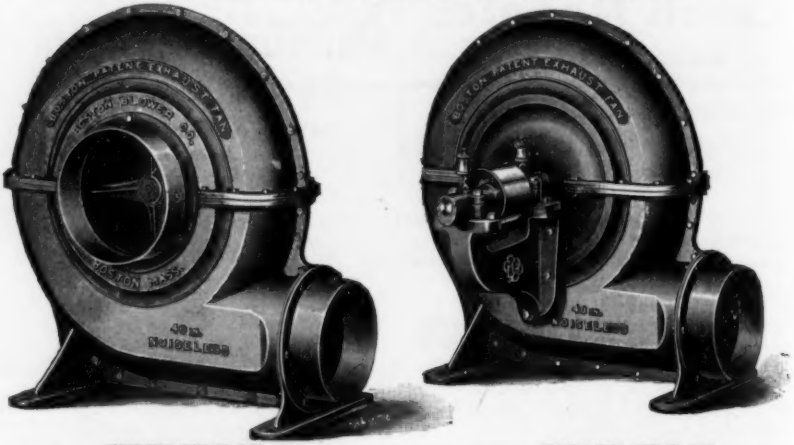

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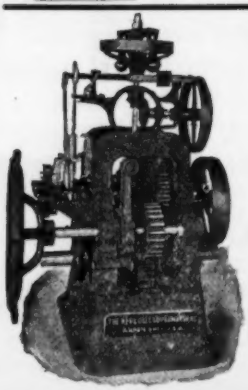

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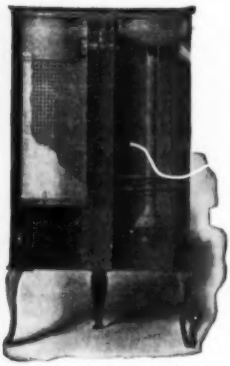

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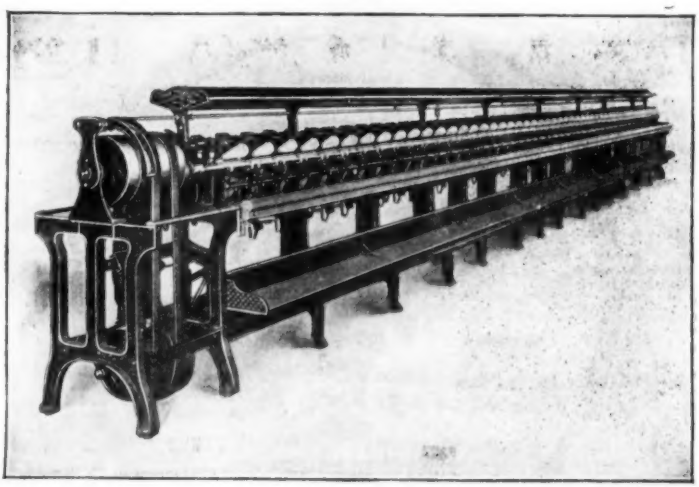

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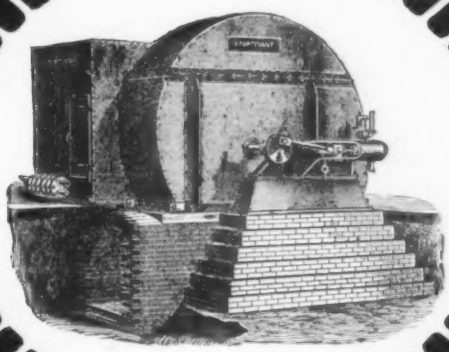

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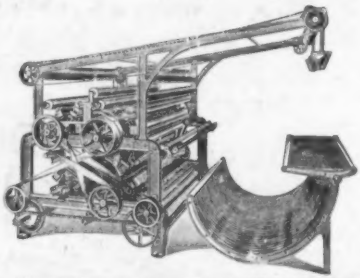

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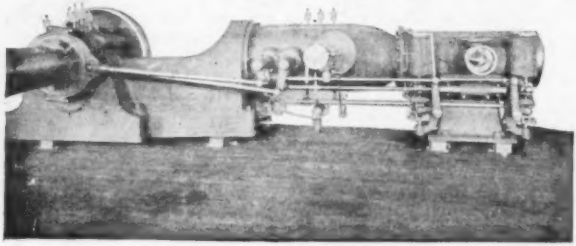

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